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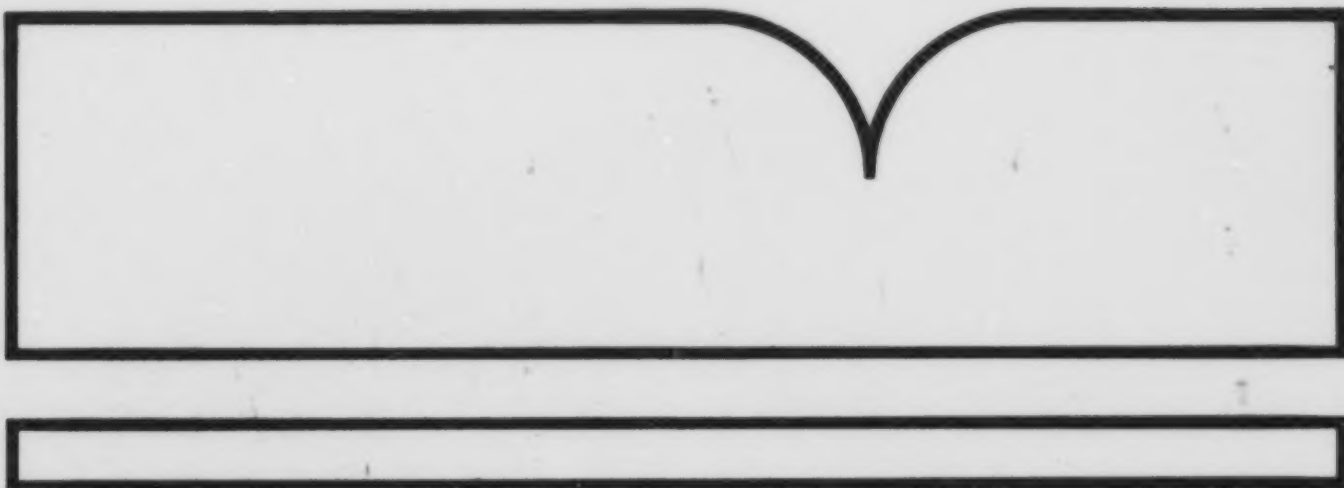
Regulations and Non-Regulatory Revisions to
State Implementation Plan: North Dakota

Atlantic Environmental Associates, Inc.
Waltham, MA

Prepared for

Environmental Protection Agency
Research Triangle Park, NC

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**Regulations and Non-Regulatory
Revisions to State Implementation Plan:
North Dakota**

By

**Atlantic Environmental Associates, Inc.
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Contract No. 68-02-3565

EPA Project Officer: Willis P. Beal

Prepared for

**U.S ENVIRONMENTAL PROTECTION AGENCY
Control Programs Development Division
Office of Air Quality Planning and Standards
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16. ABSTRACT This document has been produced in compliance with Section 110(h) of the Clean Air Act, as amended in 1977, which mandates periodic publication of State Implementation Plan (SIP) requirements. The first section of the document comprises the Federally approved SIP regulations. It consists of the EPA-approved State and/or local air pollution control regulations cited by reference in the <u>Federal Register</u>; regulations promulgated as of August 1, 1981 have been included in this document. The present compilation constitutes an update of a previous documentation of regulations as of July 1, 1979. State and/or local air quality regulations which have not been Federally approved as of August 1, 1981, are not included. However, any omissions of regulations from this document in no way affects the ability of the respective Federal, State, or local agencies to enforce such regulations. A summary sheet of the regulatory revisions is provided to give a quick historical assessment of the changes. The second part of the document contains the text of non-regulatory SIP revisions approved by EPA up to August 1, 1981, excluding notices or certifications of public hearings and technical support data. A complete tabulation of these revisions is also provided.		
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PREFACE

This document has been produced in compliance with Section 110(h) of the Clean Air Act, as amended in 1977, which mandates periodic publication of State Implementation Plan (SIP) requirements. The first section of the document comprises the Federally approved SIP regulations. It consists of the EPA approved State and/or local air pollution control regulations cited by reference in the Federal Register; all regulations Federally promulgated as of August 1, 1981 have been included.

The present compilation constitutes an update of a previous documentation of regulations as of July 1, 1979.* State and/or local air quality regulations which have not been Federally approved as of August 1, 1981 are not included. However, any omissions of regulations from this document in no way affects the ability of the respective Federal, State or local agencies to enforce such regulations.

This document is not intended to provide a tool for determining the enforceability of any given regulation. Rather, it is intended to provide a comprehensive compilation of those regulations which are incorporated by reference into Title 40, Part 52, of the Code of Federal Regulations (CFR). The exclusion of a Federally approved regulation from this document does not diminish the enforceability of the regulation. Similarly, the inclusion of a given regulation in this document does not, in itself, render the regulation enforceable by either the State or EPA.

The regulations have been organized in this document according to the official State/local agency format. However, since State air quality regulations vary widely in their organization, content, and language, a standardized subject index has been added. The index listings consist of both pollutant and activity oriented categories to facilitate usage. For example, regulations which apply to copper smelters may be found under sulfur compounds (50.2), particulate matter process weight (50.1.1), or copper smelters (51.15). Federal regulations pertaining to a given State are not included herein but can be found under Title 40 Code of Federal Regulations, Part 52.

Additionally, a summary sheet of the regulatory revisions is included to provide a quick historical assessment of the changes. These summary sheets contain the date of submittal to EPA of each revision and the Federal Register publication date on which the revision was approved by EPA. A brief description of the regulation which was submitted is also included.

In accordance with the Act, the second part of the document contains non-regulatory SIP revisions approved by EPA up to August 1, 1981. All approved non-regulatory revisions listed under Identification of Plan in the CFR are included except notices or certifications of public hearings, and technical support data. Non-regulatory submittals which have only received EPA approval on selected elements are included in their entirety with an accompanying indication of the status of Federal actions on the non-approved elements. The non-regulatory revisions have been organized in this document

* Regulations and Non-Regulatory Revisions to State Implementation Plan: North Dakota, EPA-450/2-80-041, prepared under Contract 68-02-3388, July 31, 1980.

according to the date of publication of EPA approval in the Federal Register. For historical completeness, a complete tabulation of these revisions is provided at the beginning of this second section.

SUMMARY OF
EPA-APPROVED REGULATORY REVISIONS TO STATE OF NORTH DAKOTA SIP
BETWEEN JULY 1, 1979 AND JULY 31, 1981

Publication of Approval	Submittal Date	Page	Document Description
11/02/79	07/17/78	44FR63103	Revised regulations for new source performance standards (NSPS), revised regulations for hazardous emission standards, revised regulations for provisions for the prevention of significant deterioration (PSD), new regulations for Restriction of Odorous Air Contaminants (23-25-16) and the Restriction of Fugitive Emissions (23-25-17).
08/12/80	01/25/80	45FR53476	New lead standard. Revisions Tables 642 of 23-25-02. Revisions to 23-25 14.6 and a new 23-25 14.11.

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R23-25-01 GENERAL PROVISIONS

1.010 PURPOSE

It is the purpose of these air quality standards and emission regulations to state such requirements as shall be required to achieve and maintain the best air quality possible, consistent with the best available control technology, to protect human health, welfare, and property to prevent injury to plant and animal life, to promote the economic and social development of this State, to foster the comfort and convenience for the people, and to facilitate the enjoyment of the natural attractions of this State.

1.020 SCOPE AND EFFECTIVE DATES

These air quality standards and emission regulations apply to any source or emission existing partially or wholly within the State of North Dakota. The Effective Date (ED) for each section or subsection of these regulations is listed in parenthesis at the end of each revised section or subsection.

1.030 AUTHORITY

The North Dakota State Department of Health has been authorized to provide and administer these regulations under the provisions of Section 23-25-01 through Section 23-25-10 of Chapter 23-25 of the North Dakota Century Code.

1.040 DEFINITIONS

As used in these regulations, except as otherwise specifically provided or where the context indicates otherwise, the following words shall have the meanings ascribed to them in this section:

- (1) "Act" shall mean Section 23-25-01 through Section 23-25-10 of Chapter 23-25 of the North Dakota Century Code.
- (2) "Air contaminant" means any solid, liquid, gas, or odorous substance or any combination thereof.
- (3) "Air pollution" means the presence in the outdoor atmosphere of one or more air contaminants in such quantities and duration as is or may be injurious to human health, welfare, or property, animal or plant life, or which unreasonable interferes with the enjoyment of life or property.
- (4) "Ambient air" means the surrounding outside air.
- (5) "ASME" shall mean the American Society of Mechanical Engineers.
- (7) "Control equipment" shall mean any device or contrivance which prevents or reduces emissions.

- (8) "Department" shall mean the North Dakota State Department of Health.
- (9) "Emission" shall mean a release of air contaminants into the ambient air.
- (10) "Existing" shall mean equipment, machines, devices, articles, contrivances or installations which are in being on or before July 1, 1970, unless specifically designated within these regulations; except that any existing equipment, machine, device, article, contrivance or installation which is altered, repaired or rebuilt after July 1, 1970 shall be reclassified as "new" if such alteration, rebuilding, or repair results in the emission of an additional or greater amount of air contaminants.
- (11) "Fuel burning equipment" shall mean any furnace, boiler apparatus, stack, appurtenances thereto used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer.
- (12) "Fugitive emissions" shall mean solid airborne particulate matter, fumes, gases, mist, smoke, odorous matter, vapors, or any combination thereof generated incidental to an operation process procedure and/or emitted from any source other than through a well defined stack or chimney.
- (13) "Garbage" shall mean putrescible animal and vegetable wastes resulting from the handling, preparation, cooking and consumption of food, including wastes from markets, storage facilities, handling and sale of produce and other food products.
- (14) "Heat input" shall mean the aggregate heat content of all fuels whose products of combustion pass through a stack or stacks. The heat input value to be used shall be the equipment manufacturer's or designer's guaranteed maximum input, whichever is greater.
- (15) "Incinerator" shall mean any article, machine, equipment, device, contrivance, structure or part of a structure used for the destruction of garbage, rubbish, or other wastes by burning or to process salvageable material by burning.
- (16) "Installation" shall mean any property, real or personal, including but not limited to processing equipment, manufacturing equipment, fuel burning equipment, incinerators, or any other equipment, or construction, capable of creating or causing emissions.
- (17) "Multiple chamber incinerator" shall mean any article, machine, equipment, contrivance, structure or part of a structure used to dispose of combustible refuse by burning, consisting of three or more refractory lined combustion furnaces in series

physically separated by refractory walls, interconnected by gas passage ports or ducts and employing adequate parameters necessary for maximum combustion of the material to be burned.

- (18) "New" shall mean equipment, machines, devices, articles, contrivances or installations built or installed on or after July 1, 1970, unless specifically designated within these regulations; and installations existing at said stated time which are later altered, repaired or rebuilt and result in the emission of an additional or greater amount of air contaminants.
- (19) "Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.
- (20) "Open burning" shall mean the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the ambient air without passing through an adequate stack, duct, or chimney.
- (21) "Particulate matter" shall mean any material, except water in uncombined form that is or has been airborne, and exists as a liquid or a solid at standard conditions.
- (22) "Person" shall mean any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other state or political subdivision or agency thereof and any legal successor, representative agent or agency of the foregoing.
- (23) "Pesticide" shall mean, but is not limited to (1) any agent, substance, or mixture of substances intended to prevent, destroy, control, or mitigate any insect, rodent, nematode, predatory animal, snail, slug, bacterium, weed, and any other form of plant or animal life, fungus, or virus, that may infect or be detrimental to persons, vegetation, crops, animals, structures, or households or be present in any environment or which the Department may declare to be a pest, except those bacteria, fungi, protozoa, or viruses on or in living man or other animals; (2) any agent, substance, or mixture of substances intended to be used as a plant regulator, defoliant, or desiccant; and (3) any other similar substance so designated by the Department, including, but not limited to, herbicides, rodenticides, lampreycides, plant regulators, gametocides, post-harvest decay preventatives, and antioxidants.
- (24) "Premises" shall mean any property, piece of land or real estate or building.
- (25) "Process weight" shall mean the total weight of all materials introduced into any specific process which may cause emissions. Solid fuels charged will be considered as part of the process weight, but liquid and gaseous fuels and combustion air will

not.

(26) "Process weight ratio" shall mean the rate established as follows:

- (a) For continuous or long-run steady-state operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.
- (b) For cyclical or batch operations, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process or operation or the design of any equipment is such as to permit more than one interpretation of this definition, the interpretation that results in the minimum value for allowable emission shall apply.

(27) "Public nuisance" shall mean any condition of the ambient air beyond the property line of the offending person which is injurious to health, or offensive to the senses, or which causes or constitutes an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(28) "Refuse" shall mean any combustible waste material, trade waste, rubbish, or garbage containing carbon in a free or combined state.

(29) "Rubbish" shall mean non-putrescible solid wastes consisting of both combustible and non-combustible wastes. Combustible rubbish includes paper, rags, cartons, wood, furniture, rubber, plastics, yard trimmings, leaves, and similar materials. Non-combustible rubbish includes glass, crockery, cans, dust, metal furniture and like materials which will not burn at ordinary incinerator temperatures (1,600 degrees F to 1,800 degrees F).

(30) "Salvage operation" shall mean any operation conducted in whole or in part for the salvaging or reclaiming of any product or material.

(31) "Smoke" shall mean small gas-borne particles resulting from incomplete combustion, consisting predominantly, but not exclusively, of carbon, ash, and other combustible material, that form a visible plume in the air.

(32) "Source" shall mean any property, real or personal, or person contributing to air pollution.

(33) "Source operation" shall mean the last operation preceding emission which operation (a) results in the separation of the air contaminant from the process materials or in the conversion of the process materials into air contaminants, as in the case of combustion fuel; and (b) is not an air pollution abatement

operation.

- (34) "Stack or chimney" shall mean any flue, conduit or duct arranged to conduct emissions.
- (35) "Submerged fill pipe" shall mean any fill pipe the discharge opening of which is entirely submerged when the liquid level is six inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean any fill pipe the discharge opening of which is entirely submerged when the liquid level is 1.5 times the fill pipe diameter in inches above the bottom of the tank.
- (36) "Standard conditions" shall mean a dry gas temperature of 68 degrees Fahrenheit (20 degree Centigrade) and a gas pressure of 14.7 pounds per square inch absolute (760 millimeters of mercury).
- (37) "Trade waste" shall mean solid, liquid, or gaseous waste material resulting from construction or the conduct of any business, trade or industry, or any demolition operation including, but not limited to wood, plastics, cartons, grease, oil, chemicals and cinders.
- (38) "Volatile organic compounds" shall mean any compound containing carbon and hydrogen or containing carbon and hydrogen in combination with any other element which has a Modified Reid vapor pressure of 1.5 pounds per square inch absolute (77.6 mm Hg) or greater under actual storage conditions.
- (39) "Waste classification" shall mean the seven classifications of waste as defined by the Incinerator Institute of America and American Society of Mechanical Engineers.

1.045 Abbreviations

The abbreviations used in this regulation have the following meanings:

A-ampere
A.S.T.M.-American Society for
Testing and Materials
Btu-British thermal unit
C-degree Celsius (centigrade)
cal-calorie
CdS-cadmium sulfide
cfm-cubic feet per minute
cu ft-cubic feet
CO-carbon monoxide
CO₂-carbon dioxide
dcf-dry cubic feet
dcm-dry cubic meter
dscm-dry cubic meter (s) at

meq-milliequivalent (s)
min-minute (s)
mg-milligrams (s)-10⁻³ gram
Mg-megagram-10⁶ gram
ml-milliliter (s)-10⁻³ liter
mm-millimeter (s)-10⁻³ meter
mol-mole
mol. wt.-molecular weight
mV-millivolt
N₂-nitrogen
N-newton
ng-nanogram-10⁻⁹ gram
nm-nanometer (s)-10⁻⁹ meter
NO-nitric oxide

standard conditions
 dscf-dry cubic feet at
 standard conditions
 eq-equivalents
 F-degree Fahrenheit
 ft-feet
 g-gram(s)
 gal-gallon(s)
 g eq-gram equivalents
 gr-grain(s)
 hr-hour(s)
 HCl-hydrochloric acid
 Hg-mercury
 H2O-water
 H2S-hydrogen sulfide
 H2SO4-sulfuric acid
 Hz-hertz
 in.-inch(es)
 J-joule
 K-degree Kelvin
 k-1,000
 kg-kilogram(s)
 l-liter(s)
 lpm-liter(s) per minute
 lb-pound(s)
 m-meter(s)
 m**3-cubic meter

NO2-nitrogen dioxide
 NOx-nitrogen oxides
 O2-oxygen
 Pa-pascal
 ppb-parts per billion
 ppm-parts per million
 psia-pounds per square in
 absolute
 psig-pounds per square
 inch gage
 R-degree Rankine
 s-sec-second
 scf-cubic feet at standard
 conditions
 scfh-cubic feet per hour at
 standard conditions
 scm-cubic meter at standard
 conditions
 SO2-sulfur dioxide
 SO3-sulfur trioxide
 SOx-sulfur oxides
 sq ft-square feet
 std-at standard conditions
 ug-microgram(s) -10**-6 gram
 V-volt
 W-watt

1.050 ENTRY ONTO PREMISES-AUTHORITY

Entry onto premises and on-site inspection shall be made pursuant to section 23-25-05 of Chapter 23-25 of the North Dakota Century Code.

1.060 VARIANCES

1.061 Where upon written application of the responsible person or persons the Department finds that by reason of exceptional circumstances strict conformity with any malfunction or within such other time period as the Department may specify. In cases of major equipment failure, additional time period may be granted by the Department provided a corrective program has been submitted by the person and approved by the Department. The Department shall be notified when the condition causing the malfunction has been corrected.

1.130 TIME SCHEDULE FOR COMPLIANCE

Except as otherwise specified, compliance with the provisions of these regulations shall be according to the following time schedule:

1.131 New Installations

All new installations shall comply as of going into continuous routine operation for its intended purpose.

1.132 Existing Installations

All existing installations shall be in compliance as of July 1, 1970 unless the owner or person responsible for the operation of the installation shall have submitted to the Department in a form and manner satisfactory to it, a program and schedule for achieving compliance, such program and schedule to contain a date on or before which full compliance will be attained, and such other information as the Department may require. If approved by the Department, such date will be the date on which the person shall comply. The Department may require persons submitting such program to submit subsequent periodic reports on progress in achieving compliance.

1.140 PROHIBITION OF AIR POLLUTION

1.141 No person shall permit or cause air pollution, as defined in Section 1.040(3).

1.142 No person shall permit or cause a public nuisance, as defined in Section 1.040(27).

1.143 No person shall cause or permit the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any person or to the public or which endanger the comfort, repose, health, or safety of any such person or the public or which cause injury or damage to business or property.

1.144 Nothing in any other part of these regulations concerning emission of air contaminants or any other regulation relating to air pollution shall in any manner be construed as authorizing or legalizing the creation or maintenance of air pollution, a public nuisance, or a nuisance as described in 1.143.

R23-25-02 AMBIENT AIR QUALITY STANDARDS

2.100 SCOPE

The Ambient Air Quality Standards as presented below pertain to the environmental air of the State of North Dakota.

2.200 PURPOSE

It is the purpose of these air quality standards to set forth levels of air quality for the maintenance of public health and safety, and to provide guidance to the city, county, and township boards of health in conducting programs to abate air pollution. These Standards set forth a mechanism of achieving cleaner air and are not a permit for the unnecessary degradation of air quality.

2.300 AIR QUALITY GUIDELINES

In keeping with the purpose of these Ambient Air Quality Standards, the quality should be such that:

- (a) The health of even sensitive or susceptible segments of the population will not be adversely affected;
- (b) concentrations of pollutants will not cause public nuisance or annoyance;
- (c) significant damage to animals, ornamental plants, forest and agricultural crops will not occur;
- (d) visibility will not be significantly reduced;
- (e) metals or other materials will not be significantly corroded or damaged;
- (f) fabrics will not be soiled, deteriorated, or their colors affected; and
- (g) natural scenery will not be obscured.

2.400 AMBIENT AIR QUALITY STANDARDS

2.410 Particulates and Gases

The standards of ambient air quality listed in Table 1 define the limits of air contamination by particulates and gases, above which limits the ambient air is hereby declared to be unacceptable and require air pollution control measures. Until additional pertinent information becomes available through surveillance and research with respect to the effects of the air contaminants listed in Table 1, the air quality limits listed in Table 1 shall apply in North Dakota. The limits stated, include normal background

levels of particulates and gases.

2.420 Radioactive Substances

The ambient air shall not contain any radioactive substances exceeding the concentrations specified in Regulation R23-20.0-01 through R23-20.1-10 of the North Dakota State Department of Health of the title "Radiological Health Regulations.:

2.430 Other Air Contaminants

The ambient air shall not contain air contaminants in concentrations that would be injurious to human health or well-being, or unreasonably interfere with the enjoyment of property or that would injure plant or animal life.

2.500 METHODS OF SAMPLING AND ANALYSIS

Air contaminants shall be measured by the method or methods listed in Table 2, or by such other methods approved by the Department. The publications or their replacements listed in Table 2 are made part of these regulations by reference.

The sampling and analytical procedures employed and the numbers, duration, and location of samples to be taken to measure ambient levels of air contaminants shall be consistent with obtaining accurate results which are statistically significant and representative of the conditions being evaluated.

2.600 REFERENCE CONDITIONS

The standards of ambient air quality listed in Table 1 are corrected to a reference temperature of 25 degrees C. and a reference pressure of 760 millimeters of mercury (1,013.2 millibars).

2.800 CONCENTRATIONS OF AIR CONTAMINANTS IN THE AMBIENT AIR RESTRICTED

2.810 No person shall cause or permit the emission of air contaminants from any premises in such manner and amounts that the concentrations and frequencies attributable to such emission exceed those shown in 2.400 in the ambient air at any place beyond the premises on which the source is located.

2.820 Nothing in any other part or section of these regulations shall in any manner be construed as authorizing or legalizing the emission of air contaminants in such manner as prohibited in 2.810.

Table 1. AMBIENT AIR QUALITY STANDARDS

Contaminants	Standards	
	<u>Maximum Permissible Concentrations</u>	
Particulates	60	micrograms per cubic meter of air, maximum annual geometric mean
Total Suspended Particulate	150	micrograms per cubic meter of air, maximum 24-hour concentration not to be exceeded more than once per year
Settled Particulate (Dustfall))	15	tons per square mile per month, maximum 3-month arithmetic mean in residential areas
	30	tons per square mile per month, maximum 3-month arithmetic mean in heavy industrial areas
Coefficient of Haze	0.4	Coh. per 1,000 lineal feet, maximum annual geometric mean
Sulfur Oxides Sulfur Dioxide	60	micrograms per cubic meter of air (0.02 ppm), maximum annual arithmetic mean
	260	micrograms per cubic meter of air (0.10 ppm), maximum 24-hour concentration
	715	Micrograms per cubic meter of air (0.28 ppm), maximum 1-hour concentration
Reactive Sulfur (Sulfation)	0.25	milligram sulfur trioxide per 100 square centimeters per day, maximum annual arithmetic mean
	0.50	milligram sulfur trioxide per 100 square centimeters per day, maximum for a 1-month period
Suspended Sulfate	4	micrograms per cubic meter of air, maximum annual arithmetic mean
	12	micrograms per cubic meter of air, maximum 24-hour concentration not to be exceeded over 1 percent of the time
Sulfuric Acid Mist Sulfur Trioxide, or any combination thereof	4	micrograms per cubic meter of air, maximum annual arithmetic mean
	12	micrograms per cubic meter of air, maximum 24-hour concentration not to be exceeded over 1 percent of the time
	30	micrograms per cubic meter of air, maximum 1-hour concentration not to be exceeded over 1 percent of the time

Hydrogen Sulfide	45	micrograms per cubic meter of air (0.032 ppm), maximum 1/2-hour concentration not to be exceeded more than twice in any 5 consecutive days
	75	micrograms per cubic meter of air (0.054 ppm), maximum 1/2-hour concentration not to be exceeded over twice a year
Carbon Monoxide	10	milligrams per cubic meter of air (9 ppm), maximum 8-hour concentration not to be exceeded more than once per year
	40	milligrams per cubic meter of air (35 ppm), maximum 1-hour concentration not to be exceeded more than once per year
Ozone	235	micrograms per cubic meter of air (0.12 ppm), maximum 1-hour concentration not to be exceeded more than once per year
Hydrocarbons	160	micrograms per cubic meter of air (0.24 ppm), maximum 3-hour concentration (6 to 9 a.m.) not to be exceeded more than once per year
Nitrogen Dioxide	100	micrograms per cubic meter of air (0.05 ppm), maximum annual arithmetic mean
	200	micrograms per cubic meter of air (0.1 ppm), maximum 1-hour concentration not to be exceeded over 1 percent of the time in any 3-month period
Lead	1.5	micrograms per cubic meter of air, maximum arithmetic mean averaged over a calendar quarter

Table 2. METHODS OF AIR CONTAMINANT MEASUREMENT

Air Contaminant	Sampling Method	Sampling Interval*	Analytical Method
PARTICULATES			
Total Suspended Particulates	High-Volume Sampling	24 Hours	Gravimetric - Reference Method for the Determination of Suspended Particulates in the Atmosphere (High Volume Method). CFR, Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix B.
Settled Particulate (Dustfall)	Dustfall Jar	1 month	Gravimetric - ASTM D 1739-70.
Coefficient of Haze	Paper Tape Sampling	3 Hours	Light Transmittance - ASTM D 1704-61.
SULFUR OXIDES			
Sulfur Dioxide	Absorption	Continuous, 1-Hr. or 24 Hours	Colorimetric - Reference Method for the Determination of Sulfur Dioxide in the Atmosphere (Pararosaniline Method). CFR Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix B.
Reactive Sulfur (Sulfation)	Lead Peroxide Plate	1 month	Turbidimetric, Lead Peroxide Plate - Huey, N.A., "The Lead Dioxide Estimation of Sulfur Dioxide Pollution", Journal of the Air Pollution Control Assoc. Vol. 18, pp. 610-611, September 1968.
Suspended Sulfate	High-Volume Sampling	24 hours	Turbidimetric, Barium Sulfate Method - Selected Methods for the Measurement of Air Pollutants. U.S. Public Health Service Publication No. 999-AP-11, May 1965.

Sulfuric Acid Mist Sulfur Trioxide	Filter Paper	1 Hour to 24 Hours	Titration - Commins, B.T. "Determination of Particulate Acid in Town Air." Analyst, Vol. 88, pp. 364-367, May 1963.
Hydrogen Sulfide	(a) Paper Tape Sampling	1/2 Hour	Light Transmittance, Lead Acetate Impregnated Tape - Sensenbaugh, J.D. and Hemeon, W.C.L., "A Low Cost Sampler for Measurement of Low Concentration of Hydrogen Sulfide", Air Repair Vol. 4, No. 1, pp. 5-7, May 1954.
	(b) Absorption	1/2 Hour	Colorimetric - Jacobs, Braverman, Hochheiser, "Ultramicrodetermination of Sulfides in Air", Anal. Chem. Vol. 29, p. 1349, 1957.
Carbon Monoxide	Absorption of Infrared Radiation	Continuous 1-Hr or 8 Hours	Non-Dispersive Infrared Spectrometry - Reference Method for the Continuous Measurement of Carbon Monoxide in the Atmosphere (Non-Dispersive Infrared Spectrometry). Code of Federal Regulations, Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix C.
Ozone	Chemilum- inescent	Contin- uous, 1 hr	Chemiluminescent, Photomultiplier Detector - Measurement Principle and Calibration Procedure for the Measurement of Ozone in the Atmosphere. Code of Federal Regulations, Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix D.
Hydrocarbons	Flame Ionization Detector	Semi-contin- uous, 3 Hours	Flame Ionization - Reference Method for the Determination of Hydrocarbons Corrected for Methane. CFR, Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix E.

Nitrogen Dioxide	Absorption Continuous, 1-Hr.	Colorimetric - Reference Method for the Determination of Nitrogen Dioxide in the Atmosphere (24-Hour Sampling Method). CFR, Title 40, Chapter I, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix F.
Lead	High-Volume Sampling 24 Hours	Atomic Absorption Spectrometry - Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air Code of Federal Regulations, Title 40, Chapter 1, Part 50, National Primary and Secondary Ambient Air Quality Standards, Appendix G.

*NOTE: Normal Sampling Interval. Other Sampling Intervals May be Used if Approved by the Department.

R23-25-03 RESTRICTION OF EMISSION OF VISIBLE AIR CONTAMINANTS

3.100 RESTRICTIONS APPLICABLE TO EXISTING INSTALLATIONS

No person shall discharge into the ambient air from any single source of emission whatsoever with the exception of existing incinerators, any air contaminant which exhibits greater than 40% opacity except that a maximum of 60% opacity shall be permissible for not more than one six-minute period per hour.

3.200 RESTRICTIONS APPLICABLE TO NEW INSTALLATIONS AND ALL INCINERATORS

No person shall discharge into the ambient air from any single source of emission whatsoever, any air contaminant which exhibits greater than 20% opacity except that a maximum of 40% opacity shall be permissible for not more than one six-minute period per hour.

3.300 RESTRICTIONS APPLICABLE TO FUGITIVE EMISSIONS

No person shall discharge into the ambient air from any source of fugitive emissions as determined or identified by the Department any air contaminant which exhibits greater than 40% opacity for not more than one six-minute period per hour having been visibly transported off the property of emission origination and remains visible to an observer positioned off said property when sighting along a line which does not cross the property of emission origination.

3.400 EXCEPTIONS

The provisions of 3.100, 3.200 and 3.300 shall not apply in the following circumstances:

- (1) Where the presence of uncombined water is the only reason for failure of an emission to meet the requirements.
- (2) When smoke is emitted for purpose of training or research when approved by the Department, including training schools for fire fighting personnel.
- (3) Where an applicable opacity standard is established for a specific source.
- (4) Where the limits specified in these regulations cannot be met because of operations or processes such as, but not limited to, oil field service and drilling operations, but only so long as it is not technically feasible to meet said specifications.
- (5) Where fugitive emissions are caused by agricultural activities related to the normal operations of a firm.

3.500 METHOD OF MEASUREMENT

Compliance with visible emission standards in Regulation R23-25-03 shall be determined by conducting observations in accordance with Reference Method 9 of Appendix A to Regulation R23-25-12. Opacity readings of portions of plumes which contain condensed uncombined water vapor shall not be used for purposes of determining compliance with visible emissions standards. The results of continuous monitoring by transmissometer, which indicate that the opacity at the time visible emissions were taken, were not in excess of the standard, are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1 in Appendix B, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.

R23-25-04 OPEN BURNING RESTRICTIONS

4.100 REFUSE BURNING RESTRICTIONS

No person shall dispose of refuse and other combustible material by open burning, or cause, suffer, allow or permit open burning of refuse and other combustible material and no person shall conduct or cause or permit the conduct of a salvage operation by open burning.

4.200 PERMISSIBLE OPEN BURNING

The open burning of refuse and other combustible material may be conducted as specified in the subsections set forth below if no public nuisance is or will be created and if the burning is not prohibited by, and is conducted in compliance with, other applicable laws, ordinances and regulations. The authority to conduct open burning under the provisions of this section does not exempt or excuse a person from the consequences, damages, or injuries which may result therefrom.

- 4.201 Fires purposely set for the instruction and training of public and industrial fire-fighting personnel when authorized by the appropriate governmental entity.
- 4.202 Fires set for the elimination of a fire hazard which cannot be abated by any other means when authorized by the appropriate governmental entity.
- 4.203 Fires set for the removal of dangerous or hazardous material where there is no other practical or lawful method of disposal and burning is approved in advance by the Department. Where there is imminent danger to human health or safety and where there is no other practical or lawful method of disposal, burning can be initiated without prior notice to the Department provided notice is furnished as soon as practical.
- 4.204 Campfires and other fires used solely for recreational purposes, for ceremonial occasions, or for outdoor preparation of food.
- 4.205 Fires purposely set to forest or rangelands for a specific reason in the management of forests or game in accordance with practices recommended by the North Dakota Game and Fish Department, the North Dakota Department of Agriculture, and the United States Forest Service, and the burning is approved in advance by the Department.
- 4.206 The burning of trees, brush, grass, wood, and other vegetable matter in the clearing of land, right-of-way maintenance operations, and agricultural crop burning if the following conditions are met:

- a. Prevailing winds at the time of the burning must be away from any city;
- b. The location of the burning must not be adjacent to an occupied residence other than those located on the property on which the burning is conducted;
- c. Care must be used to minimize the amount of dirt on the material being burned;
- d. Oils, rubber, and other materials which produce unreasonable amounts of air contaminants may not be burned;
- e. The initial burning may begin only between three hours after sunrise and three hours before sunset and additional fuel may not be intentionally added to the fire at times outside the limits stated above;
- f. The burning must not be conducted adjacent to any highway or public road so as to create a traffic hazard; and
- g. The burning must not be conducted within one mile of any military, commercial, county, municipal, or private airport or landing strip.

- 4.207 Where no municipal collection and disposal service is available, the burning of refuse and other combustible materials generated in the operation of a domestic household if the following conditions are met:
- a. The material to be burned must not be the combined waste from a building designed to accommodate more than three such households;
 - b. The burning must be conducted on the property on which the waste is generated; and
 - c. The initial burning may begin only between three hours after sunrise and three hours before sunset and additional fuel may not be intentionally added to the fire at times outside the limits stated above.

- 4.208 The burning of liquid hydrocarbons which are spilled or lost as a result of pipeline breaks or other accidents involving the transportation of such materials or which are generated as wastes as the result of oil exploration, development, production, refining, or processing operations if the following conditions are met:
- a. The material cannot be practicably recovered or otherwise lawfully disposed of in some other manner;

- b. The burning must not be conducted within a city or adjacent to an occupied residence or in such proximity thereto that the ambient air of such city or occupied residence may be affected by the air contaminants being emitted;
- c. The initial burning may begin only between three hours after sunrise and three hours before sunset and additional fuel may not be intentionally added to the fire at times outside the limits stated above; and
- d. The burning must be controlled so that a traffic hazard is not created as the result of the air contaminants being emitted.
- e. The burning must be approved in advance by the Department, except as provided in 4.203.

R23-25-05 EMISSIONS OF PARTICULATE MATTER RESTRICTED

5.100 RESTRICTION OF EMISSION OF PARTICULATE MATTER FROM INDUSTRIAL PROCESSES

5.110 GENERAL PROVISIONS

5.111 Section 5.100 applies to any operation, process, or activity from which particulate matter is emitted except the burning of fuel for indirect heating in which the products of combustion do not come into direct contact with process materials, the burning of refuse, and the processing of salvageable material by burning.

5.112 The process weight rate per hour referred to in this section shall be based upon the normal operation maximum capacity of the equipment and if such normal maximum capacity should be increased by process or equipment changes, the new normal maximum capacity shall be used as the process weight in determining the allowable emissions.

5.120 EMISSION LIMITATIONS

No person shall cause, suffer, allow, or permit the emission of particulate matter in any one hour from any source in excess of the amount shown in Table 3 for the process weight allocated to such source.

5.130 EXCEPTIONS

5.131 Temporary operational breakdowns or cleaning of air pollution equipment for any process are permitted provided the owner or operator immediately advises the Department of the circumstances and outlines an acceptable corrective program and provided such operations do not cause an immediate public health hazard.

5.132 The Department may prescribe air quality control requirements that are more restrictive and more extensive than provided in 5.120 if the particulate matter emitted is a radioactive, toxic, or deleterious substance which may affect human health or well-being or that would cause human health or well-being or that would cause significant damage to animal or plant life.

5.133 Any existing emission source which has particulate collection equipment with a collection efficiency of 99.7 percent or more by weight shall be considered as meeting the provisions of 5.120. The efficiency of the particulate collection equipment shall be determined as outlined in 5.400 with the process being served by the particulate collection equipment being run at normal operation maximum capacity.

5.134 Any portable emission source, not operated at the same

premise for more than six months, shall be considered as meeting the provisions of 5.120 if the following conditions are met:

- (a) The source must not be located within a city;
- (b) The source must not be located within one-half mile of any occupied residence, and within one mile of the source there shall be no more than two occupied residences;
- (c) The source must not be located within one-quarter mile of any highway or public road;
- (d) The source stack or stacks must be equipped with particulate collection equipment with a collection efficiency of 85 percent or more by weight. The efficiency of the particulate collection equipment shall be determined as in 5.400.

5.200 MAXIMUM ALLOWABLE EMISSION OF PARTICULATE MATTER FROM FUEL BURNING EQUIPMENT USED FOR INDIRECT HEATING

5.210 GENERAL PROVISIONS

5.211 Section 5.200 applies to installations in which fuel is burned for the primary purpose of producing steam; hot water; hot air or other indirect heating of liquids, gases or solids and, in the course of doing so, the products of combustion do not come into direct contact with process materials. Fuels include those such as coal, coke, lignite, coke breeze, fuel oil, and wood but do not include refuse. When any products or by-products of a manufacturing process are burned for the same purpose or in conjunction with any fuel, the same maximum emission limitations shall apply.

5.212 The total heat input of all fuel burning units at the source of emission shall be used for determining the maximum allowable particulate matter which may be emitted.

5.220 EMISSION LIMITATIONS

5.221 Existing Installations

No person shall cause or permit the emission of particulate matter, caused by combustion of fuel in any existing fuel burning equipment, from any stack or chimney in excess of 0.80 pounds of particulates per million BTU heat input. Provided, however, as technology develops for making new control equipment compatible with present plants they shall comply with limitations on emissions of particulate matter from fuel burning installations as outlined in 5.222, New Installations, when directed by the Department.

5.222 New Installations

No person shall cause or permit the emission of particulate matter, caused by the combustion of fuel in any new fuel burning equipment, from any stack or chimney in excess of the quantity set forth in Table 4.

5.223 Means shall be provided in all newly constructed units and wherever practicable in existing units to allow the periodic measurement of fly ash and other particulate matter.

5.224 No person shall burn or cause or permit the burning of refuse in any installation which was designed for the sole purpose of burning fuel unless approved by the Department.

5.225 Sources subject to this regulation with a heat input of 5 million BTUs per hour or less, and sources with multiple boilers each with heat inputs of 5 million BTUs per hour or less and a total aggregate heat input of less than 10 million BTUs per hour shall be exempt from the allowable rate of emissions set forth in Table 4. These sources shall be subject to visible emission and ambient air quality standards.

5.300 INCINERATORS

5.310 GENERAL PROVISIONS

5.311 Section 5.300 shall apply to any incinerator used to dispose of refuse or other wastes by burning and the processing of salvageable material by burning.

5.312 The burning capacity of an incinerator shall be the manufacturer's or designer's guaranteed maximum rate or such other rate as may be determined by the Department in accordance with good engineering practices. In case of conflict, the determination made by the Department shall govern.

5.320 RESTRICTIONS OF EMISSIONS OF PARTICULATE MATTER FROM INCINERATORS

5.321 No person shall cause or permit the emission of particulate matter from the stack or chimney of any incinerator in excess of the amount shown in Table 5 for the refuse burning rate allocated to such incinerator.

5.322 All new incinerators and all existing incinerators to be modified to meet the requirements of 5.200 and which are to burn Type 2, 3, 4, 5, and 6 waste as classified by the Incinerator Institute of America must be equipped with auxiliary fuel burners of such capacity and design as to assure a temperature in the secondary combustion chamber

of at least 1500 degrees F. for a minimum of 0.3 second retention time.

- 5.323 No incinerator shall be used for the burning of refuse unless such incinerator is a multiple chamber incinerator. Existing incinerators which are not multiple chamber incinerators may be altered, modified, or rebuilt as may be necessary to meet this requirement. The department may approve any other alteration or modification to an existing incinerator if such be found by it to be equally effective for the purpose of air pollution control as a modification or alteration which would result in a multiple chamber incinerator. All new incinerators shall be multiple chamber incinerators, provided that the Department may approve any other kind of incinerator if it finds in advance of construction or installation that such other kind of incinerator is equally effective for purposes of air pollution control.

Existing incinerators burning Type 2 and Type 3 waste which are not multiple chamber incinerators and do not otherwise meet the requirements of 5.321 shall be modified or rebuilt in compliance with this section. Existing incinerators burning 4, 5, or 6 waste require the specific approval of the Department. Incinerators handling any garbage or organic waste must have auxiliary fuel burners that maintain a minimum temperature of 1500 degrees F. for a minimum of 0.3 second retention time.

5.400 METHODS OF MEASUREMENT

- 5.410 The reference methods in Appendix A to R23-25-12, its replacement or other methods, as approved by the Department shall be used to determine compliance with regulations 5.100, 5.200 and 5.300 as follows:

- (1) Method 1 for selection of sampling site and sample traverses.
- (2) Method 2 for determination of stack gas velocity and volume metric flow rate.
- (3) Method 3 for gas analysis.
- (4) Method 4 for determination of moisture in the stack gas.
- (5) Method 5 for concentration of particulate matter and the associated moisture content. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 30dscf (0.85dscm) except that smaller sampling times or volumes when necessitated by process variables or other factors may be approved by the Department.

- (a) For each run using Method 5 for fuel burning equipment the emissions expressed in lb/millions BTU (ng/J) shall be determined by the following procedures:

$$E = CF \left(\frac{20.9}{20.9 - \%O_2} \right) \text{ or } E = CF \left(\frac{100}{\%CO_2} \right)$$

where:

- (i) E=pollutant emission, lb/million BTU (ng/J) .
- (ii) C=pollutant concentration, lb/dscf (ng/dscm) .
- (iii) %O₂=oxygen content by volume, dry basis.
- (iv) %CO₂=carbon dioxide content by volume, dry basis.
- ((a)) The percent oxygen and percent carbon dioxide shall be determined by using the integrated or grab sampling and analysis procedures of Method 3 by traversing the duct at the same sampling locations used for each run of Method 5.

- (v) F and F_c = factors listed in the following table:

F FACTORS FOR VARIOUS FUELS

<u>FUEL TYPE</u>	<u>F</u> <u>dscf/10**6 BTU</u>	<u>F_c</u> <u>scf/10**6 BTU</u>
Coal		
Anthracite	10140	1980
Bituminous	9820	1810
Lignite	9900	1920
Oil	9220	1430
Gas		
Natural	8740	1040
Propane	8740	1200
Butane	8740	1260
Wood	9280	1840
Wood Bark	9640	1860

- ((a)) For facilities firing combinations of fuels for F or F_c factors designated in this section shall be prorated in accordance with the applicable formula as follows:

$$F = x_1 F_1 + \dots + x_n F_n \quad \text{or}$$

$$P_c = x_1 (P_c)_1 + \dots + x_n (P_c)_n$$

where:

x_n = the fraction of total heat input derived from each type of fuel.

P_n or $(P_c)_n$ = the applicable P or P_c factor for each fuel type.

n = the number of fuels being burned in combination.

- (b) For each run using Method 5 for industrial processes the emission rate expressed in lb/hr shall be determined by the equation, $lb/hr = (Q_s)(c)$ where:

Q_s = volumetric flow rate of the total effluent in dscf/hr and

c = Particulate concentration in lb/dscf.

- 5.420 The heat content of fuels shall be determined in accordance with A.S.T.M. methods D2015-66(72) (solid fuels), D240-64-(73) (liquid fuels), or D1826-64(70) (gaseous fuels) as applicable.

Table 3.

Maximum Allowable Rates of Emission of
Particulate Matter from Industrial Processes

English		Metric	
Process Weight Rate	Allowable Emission Rate	Process Weight Rate	Allowable Emission Rate
tons/hr	lb/hr	metric tons/hr	kg/hr
0.05	0.551	0.045	0.25
0.25	1.62	0.23	0.74
0.50	2.58	0.45	1.16
2.50	7.58	2.27	3.43
5.00	12.05	4.54	5.46
10.00	19.18	9.07	8.67
25.00	35.43	22.68	16.03
50.00	44.58	45.36	20.21
250.00	60.96	226.80	27.65
500.00	68.96	453.59	31.29
1000.00	77.59	907.19	35.21
2500.00	90.06	2267.96	40.87

Interpolation of the data in this table for process weight rates up to 30 tons/hr [27.21 metric tons/hr] shall be accomplished by the use of the equations:

$$E = 4.10 p^{0.67} \quad (\text{English units})$$

$$E = 1.98 p^{0.67} \quad (\text{Metric units})$$

and interpolation and extrapolation of the data for process weight rates in excess of 30 tons/hr [27.21 metric tons/hr] shall be accomplished by the use of the equations:

$$E = 55.0 p^{0.11} - 40 \quad (\text{English units})$$

$$E = 25.25 p^{0.11} - 18.2 \quad (\text{Metric units})$$

where E = allowable emission rate in lb/hr kg/hr and p = process weight rate in tons/hr [metric tons/hr].

Table 4.

Maximum Allowable Rates of Emission of
Particulate Matter from New
Fuel Burning Equipment

Heat Input	Allowable Emission Rate	Heat Input	Allowable Emission Rate
10^6 Btu/hr	lb/hr/ 10^6 Btu	joules/hr	nanogram/hr/ joule
10 or less	0.600	1.05×10^{10}	258
50	0.486	5.27×10^{10}	209
100	0.443	1.05×10^{11}	191
500	0.359	5.27×10^{11}	155
1,000	0.328	1.05×10^{12}	141
2,500	0.291	2.64×10^{12}	125
5,000	0.266	5.27×10^{12}	114
7,500	0.252	7.91×10^{12}	108
10,000	0.242	1.05×10^{13}	104
25,000	0.215	2.64×10^{13}	93
50,000	0.197	5.27×10^{13}	85
100,000	0.180	1.05×10^{14}	77

Interpolation and extrapolation of the data in this table for heat input rates in excess of ten million Btu/hr [1.054×10^{10} joules/hr] shall be accomplished by the use of equations:

$$E = 0.811 H^{-0.131} \quad (\text{English units})$$

$$E = 5307 H^{-0.131} \quad (\text{Metric units})$$

where E = allowable emission rate in lb/hr/million Btu of heat input [nanogram/hr/joule] and H = heat input in millions of Btu/hr [joules/hr].

Table 5.

Maximum Allowable Rates of
Emission of Particulate Matter from
Incinerators

Refuse Burning Rate	Allowable Emission Rate	Refuse Burning Rate	Allowable Emission Rate
lb/hr	lb/hr	kg/hr	kg/hr
10	0.041	4.54	0.019
50	0.174	22.68	0.079
300	0.873	136.08	0.396
700	1.87	317.51	0.850
1,000	2.58	453.59	1.17
1,500	3.38	681.39	1.53
3,500	5.97	1,587.57	2.71
8,000	10.39	3,628.72	4.71
25,000	22.29	11,339.75	10.10
100,000	56.42	45,359.00	25.57

Interpolation of the data in this table for refuse burning rates up to 1,000 lb/hr [453.59 kg/hr] shall be accomplished by the use of the equations:

$$E = 0.00515 R^{0.90} \quad (\text{English units})$$

$$E = 0.00476 R^{0.90} \quad (\text{Metric units})$$

and interpolation and extrapolation of the data for refuse burning rates in excess of 1,000 lb/hr [453.59 kg/hr] shall be accomplished by the use of the equations:

$$E = 0.0252 R^{0.67} \quad (\text{English units})$$

$$E = 0.0194 R^{0.67} \quad (\text{Metric units})$$

where E = allowable emission rate in lb/hr [kg/hr] and R = refuse burning rate in lb/hr [kg/hr].

R23-25-06 EMISSIONS OF SULFUR COMPOUNDS RESTRICTED

6.100 RESTRICTION OF EMISSIONS OF SULFUR DIOXIDE FROM USE OF FUEL

6.110 GENERAL PROVISIONS

6.111 Section 6.100 shall apply to any installation in which fuel is burned and in which the sulfur dioxide emission is substantially due to the content of the fuel burned, and in which the fuel is burned primarily to produce heat.

6.112 For purposes of 6.100, a fuel burning installation is any single fuel burning furnace or boiler or other unit, device, or contrivance in which fuel is burned or any grouping of two or more such furnaces or boilers or other units, devices, or contrivances on the same premises or otherwise located in close proximity to each other and under control of the same person. The capacity of such installations shall be the manufacturer's or designer's guaranteed maximum heat input rate.

6.120 RESTRICTIONS APPLICABLE TO FUEL BURNING INSTALLATIONS

No person shall cause or permit the emission of sulfur dioxide to the ambient air from any fuel burning installation in an amount greater than 3.0 pounds of sulfur dioxide per million BTU's of heat input to the installation.

6.200 RESTRICTION OF EMISSIONS OF SULFUR OXIDES FROM INDUSTRIAL PROCESSES

6.210 GENERAL PROVISIONS

Section 6.200 shall apply to all emissions except those in which both

- a. fuel is burned primarily to produce heat, and
- b. the sulfur compound emission is due primarily to the sulfur in the fuel burned.

6.220 CONCENTRATION OF SULFUR COMPOUNDS IN EMISSIONS RESTRICTED

The Department shall establish emission limitations on the amount of sulfur dioxide, sulfur trioxide, and sulfuric acid which may be emitted into the ambient air from any source specified in 6.210 in any area, if it is determined that such source is causing the Ambient Air Quality Standards to be exceeded.

6.300 METHODS OF MEASUREMENT

6.310 The reference methods in Appendix A to Regulation R23-25-12, its replacement or other methods as approved by the Department, shall be used to determine compliance with Regulation 6.100 as follows:

- (1) Method 1 for selection of sampling site and sample traverses.
- (2) Method 3 for gas analysis.
- (3) Method 6 for concentration of SO₂. The minimum sampling time shall be twenty (20) minutes, and the minimum sampling volume 0.71 DSCF (0.02 DSCM) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately thirty (30) minute intervals. Testing shall be done in accordance with 12.107 Performance Tests as applicable.

- (a) For each run using Method 6 for fuel burning equipment the emissions expressed in lb/million BTU (ng/J) shall be determined by the following procedures:

$$E = CF \left(\frac{20.9}{20.9 - \%O_2} \right) \text{ or } E = CF_C \left(\frac{100}{\%CO_2} \right)$$

where:

- (i) E = pollutant emission, lb/million BTU (ng/J).
- (ii) C = pollutant concentrations, lb/dscf (ng/dscm).
- (iii) % O₂ = oxygen content by volume, dry basis.
- (iv) % CO₂ = carbon dioxide content by volume, dry basis.
 - ((a)) The percent oxygen and percent carbon dioxide shall be determined by using the integrated or grab sampling and analysis procedures of Method 3.
- (v) F and F_C = factors listed in the following table:

F Factors For Various Fuels

Fuel Type	F	F _c
	dscf/10 ⁶ BTU	scf/10 ⁶ BTU
Coal		
Anthracite	10140	1980
Bituminous	9820	1810
Lignite	9900	1920
Oil	9220	1430
Gas		
Natural	8740	1040
Propane	8740	1200
Butane	8740	1260
Wood	9280	1840
Wood Bark	9640	1860

((a)) For facilities firing combinations of fuels the F or F_c factors designated in this section shall be prorated in accordance with the applicable formula as follows:

$$F = \frac{n}{\sum} x_i F_i \quad \text{or} \quad F_c = \frac{n}{\sum} x_i (F_c)_i$$

$i = 1 \qquad \qquad i = i$

where:

x_i = the fraction of total heat input derived from each type of fuel.

F_i or $(F_c)_i$ = the applicable F or F_c factor for each fuel type.

n = the number of fuels being burned in combination

R23-25-07 CONTROL OF ORGANIC COMPOUNDS EMISSIONS

7.100 REQUIREMENTS FOR CONSTRUCTION OF ORGANIC COMPOUNDS FACILITIES

7.110 SCOPE

Section 7.100 shall apply only to those facilities considered "new" as defined in R23-25-01 of these regulations.

7.120 VOLATILE ORGANIC COMPOUNDS STORAGE TANKS

No person shall build or install or permit the building or installation of any stationary tank, reservoir or other container of more than 40,000 gallons capacity (65,000 gallons capacity for those storage facilities constructed between July 1, 1970 and July 1, 1978) which will or might be used for storage of any volatile organic compounds unless such tank, reservoir or other container is to be a pressure sufficient at all times to prevent vapor or gas loss to the ambient air or is designed, and will be built, and equipped with one of the following vapor loss control devices:

- 7.121 A floating roof, consisting of a pontoon type, double deck type roof, or internal floating cover which will rest on the surface of the liquid contents and be equipped with a closure seal or seals, to close the space between the roof edge and tank wall or an internal floating cover or other device equally effective. The control equipment to be provided for in 7.110 shall not be permitted if the volatile organic compounds to be stored will have a vapor pressure of 12.0 pounds per square inch absolute or greater under actual storage conditions. All tank gauging and sampling devices shall be built so as to be gas-tight except when gauging or sampling is to take place.
- 7.122 A vapor recovery system consisting of a vapor-gathering system capable of collecting the volatile organic compound vapors and gases discharged and a vapor disposal system capable of processing such vapors and gases so as to prevent their emission to the ambient air and with all tank gauging and sampling devices gas-tight except when gauging or sampling is taking place.
- 7.123 Other equipment or means of equal efficiency for purposes of air pollution control as may be approved by the Department.

7.130 WATER SEPARATION FROM PETROLEUM PRODUCTS

- (a) No person shall build or install any single or multiple compartment volatile organic liquid-water separator which normally receives effluent water containing 200 gallons per day or more of any volatile organic liquid from any equipment processing, refining, treating, storing, or

handling volatile organic liquids unless such compartment is equipped with one of the vapor loss control devices, properly installed, in good working order and in operation as described in sections 7.121, 7.122 and 7.123.

7.140 SUBMERGED FILL PIPES REQUIRED

No person shall build or install or permit the building or installation of a stationary volatile organic compounds storage tank with a capacity of 1,000 gallons or more unless such tank is equipped with a submerged fill pipe during loading operations or is a pressure tank as described in 7.120 or is fitted with a vapor recovery system as described in 7.122.

7.150 VOLATILE ORGANIC COMPOUNDS LOADING FACILITIES

No person shall build or install or permit the building or installation of volatile organic compounds tank car or tank truck loading facilities handling 20,000 gallons per day or more unless such facilities are equipped with submersible filling arms or other vapor emission control systems.

7.160 PUMPS AND COMPRESSORS

All rotating pumps and compressors handling volatile organic compounds shall be equipped with mechanical seals or other equipment of equal efficiency for purposes of air pollution control as may be approved by the Department.

7.200 REQUIREMENTS FOR ORGANIC COMPOUNDS GAS DISPOSAL

7.210 No person shall cause or permit the emission of organic compounds gases and vapors, except from an emergency vapor blowdown system or emergency relief system, unless these gases and vapors are burned by smokeless flares, or an equally effective control device as approved by the Department.

7.220 Organic compounds gases and vapors which are generated as wastes as the result of oil exploration, development, production, refining, or processing operations and which contain hydrogen sulfide, shall be incinerated, flared or treated in an equally effective manner before being released to the ambient air. The emissions from all devices designed for incinerating, flaring or treating waste organic compounds gases and vapors shall result in compliance with the ambient air quality standards.

R23-25-08 CONTROL OF AIR POLLUTION FROM VEHICLES AND OTHER INTERNAL
COMBUSTION ENGINES

8.100 INTERNAL COMBUSTION ENGINE EMISSIONS RESTRICTED

No person shall operate, or cause to be operated, any internal combustion engine which emits from any source any unreasonable and excessive smoke, obnoxious or noxious gases, fumes, or vapor.

8.200 REMOVAL AND/OR DISABLING OF MOTOR VEHICLE POLLUTION CONTROL DEVICES
PROHIBITED

8.210 No person shall intentionally remove, alter, or otherwise render inoperative, exhaust emission control, crankcase ventilation, or any other air pollution control device which has been installed as a requirement of Federal law or regulation.

8.220 No person shall operate a motor vehicle originally equipped with air pollution control devices as required by Federal law or regulation unless such devices are in place and in operating condition.

R23-25-09 EMISSION OF CERTAIN SETTLEABLE ACIDS AND ALKALINE
SUBSTANCES RESTRICTED

9.100 GENERAL PROVISIONS

R23-25-09 shall apply to all emissions from any source or any premises.

9.200 EMISSIONS RESTRICTED

No person shall cause or permit the emission from any source or premises of substances having acidic or alkaline properties in such manner and amounts that the downwind fallout rate of acidic or alkaline substances, at any place where an adverse effect could occur, exceeds the upwind fallout rate by five or more spots per hour, as measured in the manner prescribed in 9.300.

9.300 METHOD OF MEASUREMENT

9.310 The fallout sampling devices used in determining compliance with R23-25-09 shall consist of circular glass dishes 15 centimeters in diameter. The dishes shall be supported on a nearly horizontal surface not larger than the dish. The dish bottom shall be at least 3 feet above the earth or other surface on which its support is resting. The dish shall be coated with a solution of thymol blue, ammonia water solution and gelatin dried to a yellow color in a vacuum oven at room temperature. Prepared dishes shall be stored in a desiccator at 40 percent relative humidity, or in plastic bags.

9.320 Fallout sampling devices shall be put in place at one or more locations upwind and downwind of a premises at locations beyond the premises on which a source or sources are located. The devices shall be left exposed to substances settling out of the ambient air for a period of 1-hour. The presence of red-colored spots visible to the naked eye on the samplers used to measure fallout of acidic substances shall be construed to mean that acidic substances have settled out of the air. The presence of blue colored spots visible to the naked eye on the samplers used to measure fallout of alkaline substances shall be construed to mean that alkaline substances have settled out of the air. The number of spots visible on samplers exposed upwind of a premises is to be subtracted from the number of spots visible on samplers exposed downwind of the same premises. The difference in the number of spots, if any, shall be construed to be attributable to emissions occurring on the premises under investigation.

9.330 In lieu of the test methods specified in 9.310 and 9.320 any other method approved by the Department may be used.

R23-25-10 CONTROL OF PESTICIDES

10.100 PESTICIDE USE RESTRICTED

- 10.110 No person shall use or permit the use of pesticides in such manner that will cause the airborne drift of pesticides off the premises on which they are being applied in such quantities that cause damage or injury to human health, crops, domestic animals, pollinating insects, vegetation, fish, and wildlife.
- 10.120 No person shall aerial spray or permit the aerial spraying of pesticides over a city in the State without the approval of the Department. Such spraying will be allowed only for well thought out public health purposes and even then only in emergencies.

10.200 RESTRICTIONS ON THE DISPOSAL OF SURPLUS PESTICIDES AND EMPTY PESTICIDE CONTAINERS

- 10.210 No person shall dispose of or permit the disposal of surplus pesticides and empty pesticide containers in such a manner as may cause pesticides to become airborne in such quantities that may cause injury or damage to human health, crops, domestic animals, pollinating insects, vegetation, fish, and wildlife.
- 10.220 No person shall dispose of or permit the disposal of surplus pesticides and empty pesticide containers by open burning.

R23-25-11 PREVENTION OF AIR POLLUTION EMERGENCY EPISODES

11.100 AIR POLLUTION EMERGENCY

R23-25-11 is designed to prevent the excessive buildup of air contaminants during air pollution episodes, thereby preventing the occurrence of an emergency due to the effects of these air contaminants on human health.

11.200 AIR POLLUTION EPISODE CRITERIA

Conditions justifying the proclamation of an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency shall be deemed to exist whenever the Department determines that the accumulation of air contaminants in any place within the State of North Dakota is attaining or has attained levels which could, if such levels are sustained or exceeded, lead to a substantial threat to human health. In making this determination, the Department will be guided by the criteria listed in Table 6.

11.300 ABATEMENT STRATEGIES EMISSION REDUCTION PLANS

11.310 When the Department declares an Air Pollution Alert, Air Pollution Warning, or Air Pollution Emergency, any person responsible for the operation of a source of air contaminants as set forth in Table 7 shall take all actions as required by Table 7 for such source of air contaminants for the level declared and shall put into effect the preplanned abatement strategies plan for the level declared.

11.320 When the Department determines that a specified criteria level has been reached at one or more monitoring sites solely because of emissions from a limited number of sources, the Department shall notify such source(s) that the actions set forth in Table 7 or the preplanned abatement strategies plans are required, insofar as it applies to such source(s) and shall be put into effect until the criteria of the specified level are no longer met.

11.400 PREPLANNED ABATEMENT STRATEGIES PLANS

11.410 Any person responsible for the operation of a source of air contaminants as set forth in Table 7 shall prepare abatement strategies plans for reducing the emission of air contaminants during periods of an Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency. Abatement strategies plans shall be designed to reduce or eliminate emissions of air contaminants in accordance with the objectives set forth in Table 7.

- 11.420 Any person responsible for the operation of a source of air contaminants not set forth under Section 11.410 shall, when requested by the Department, in writing, prepare abatement strategies plans for reducing the emission of air contaminants during periods of an Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency. Abatement strategies plans shall be designed to reduce or eliminate emissions of air contaminants in accordance with the objective set forth in Table 7.
- 11.430 Abatement strategies plans as required under Sections 11.410 and 11.420 shall be in writing and identify the sources of air contaminants, the approximate amount of reduction of air contaminants and a brief description of the manner in which the reduction will be achieved during an Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency.
- 11.440 During a condition of Air Pollution Alert, Air Pollution Warning, and Air Pollution Emergency, abatement strategies plans as required by Sections 11.410 and 11.420 shall be made available on the premises to any person authorized to enforce the provisions of applicable rules and regulations.
- 11.450 Abatement strategies plans as required by Sections 11.410 and 11.420 shall be submitted to the Department upon request within thirty (30) days of the receipt of such request; such abatement strategies plans shall be subject to review and approval by the Department. If, in the opinion of the Department an abatement strategies plan does not effectively carry out the objectives as set forth in Table 7, the Department may disapprove it, state the reasons for disapproval and order the preparation of an amended abatement strategies plan within the time period specified in the order.

Table 6. Air Pollution Episode Criteria

1. Air Pollution Forecast:

An internal watch by the Department shall be actuated by a National Weather Service advisory that Atmospheric Stagnation Advisory is in effect or the equivalent local forecast of stagnant atmospheric condition.

2. Air Pollution Alert:

The Alert level is that concentration of contaminants at which first stage control actions is to begin. An Alert will be declared when any one of the following levels is reached at any monitoring site:

- SO₂-800 ug./m³ (0.3 p.p.m.), 24-hour average.
- Particulate-3.0 COHs or 375 ug./m³, 24-hour average.
- SO₂ and particulate combined-product of SO₂ p.p.m., 24-hour average, and COHs equal to 0.2 or product of SO₂- ug./m³, 24-hour average, and particulate ug./m³, 24-hour average equal to 65×10^3 .
- CO-17 mg./m³ (15 p.p.m.), 8-hour average.
- Oxidant (O₃)-200 ug./m³ (0.1 p.p.m.) - 1-hour average.
- NO₂-1,130 ug./m³ (0.6 p.p.m.), 1-hour average, 282 ug./m³ (0.15 p.p.m.), 24-hour average.

and meteorological conditions are such the pollutant concentrations can be expected to remain at the above levels for twelve (12) or more hours or increase or in the case of oxidants, the situation is likely to reoccur within the next 24 hours unless control actions are taken.

3. Air Pollution Warning:

The warning level indicates that air quality is continuing to degrade and that additional control actions are necessary. A warning will be declared when any one of the following levels is reached at any monitoring site:

- SO₂-1,600 ug./m³ (0.6 p.p.m.), 24-hour average.
- Particulate-5.0 COHs or 625 ug./m³, 24-hour average.
- SO₂ and particulate combined-product of SO₂, p.p.m., 24-hour average and COHs equal to 0.8 or product of SO₂ ug./m³, 24-hour average and particulate ug./m³, 24-hour average equal to 261×10^3 .
- CO-34 mg./m³ (30 p.p.m.), 8-hour average.
- Oxidant (O₃)-800 ug./m³ (0.4 p.p.m.), 1-hour average.
- NO₂-2,260 ug./m³ (1.2 p.p.m.), 1-hr. average; 565 ug./m³ (0.3 p.p.m.), 24-hour average.

and meteorological conditions are such that pollutant concentrations can be expected to remain at the above levels for twelve (12) or more hours or increase or in the case of oxidants, the situation is likely to reoccur within the next 24 hours unless control actions are taken.

4. Air Pollution Emergency:

The emergency level indicates that air quality is continuing to degrade toward a level of significant harm to the health of persons and that the most stringent control actions are necessary. An emergency will be declared when any one of the following levels is reached at any monitoring site:

SO₂-2,100 ug./m³ (0.8 p.p.m.), 24-hour average.
Particulate-7.0 COHs or 875 ug./m³, 24-hour average.
SO₂ and particulate combined-product of SO₂ p.p.m., 24-hour average and COHs equal to 1.2 or product of SO₂ ug./m³, 24-hour average and particulate ug./m³, 24-hour average equal to 393x10³.
CO-46 mg./m³ (40 p.p.m.), 8-hour average.
Oxidant (O₃)-1,200 ug./m³ (0.6 p.p.m.), 1-hour average.
NO₂-3,000 ug./m³ (1.6 p.p.m.), 1-hour average; 750 ug./m³ (0.4 p.p.m.), 24-hour average.

and meteorological conditions are such that this condition can be expected to continue for twelve (12) or more hours or increase or in the case of oxidants, the situation is likely to reoccur within the next 24 hours unless control actions are taken.

5. Termination:

Once declared, any status reached by application of these criteria will remain in effect until the criteria for that level are no longer met. At such time, the next lower status will be assumed.

Table 7. Abatement Strategies Emission Reduction Plans

Air Pollution Alert Level

Part A. General

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.
2. The use of incinerators for the disposal of any form of solid waste shall be limited to the hours between 12 p.m. and 4 p.m.
3. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 p.m. and 4 p.m.
4. Persons operating motor vehicles should eliminate all unnecessary operations.

Part B. Source Curtailment

Any person responsible for the operation of a source of air contaminants listed below shall take all required control actions for this Alert Level.

Source of Air Contaminants	Control Action
1. Coal or oil-fired electric power generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Substantial reduction by diverting electric power generation to facilities outside of Alert Area.
2. Coal and oil-fired process steam generating facilities.	a. Substantial reduction by utilization of fuels having low ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing.

Source of Air Contaminants

Control Action

3. Manufacturing industries of the following classifications:
 - Primary Metals Industry.
 - Petroleum Refining Operations.
 - Chemical Industries.
 - Mineral Processing Industries
 - Grain Industries.
 - Paper & Allied Products.
 - Other Energy and Fuel Facilities
- a. Substantial reduction of air contaminants from manufacturing operations by curtailing, postponing, or deferring production and all operations.
 - b. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gas vapors or malodorous substances.
 - c. Maximum reduction of heat load demands for processing.
 - d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.
- c. Substantial reduction of steam load demands consistent with continuing plant operations.

Air Pollution Warning Level

Part A. General

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.
2. The use of incinerators for the disposal of any form of solid waste or liquid waste shall be prohibited.
3. Persons operating fuel-burning equipment which requires boiler lancing or soot blowing shall perform such operations only between the hours of 12 p.m. and 4 p.m.
4. Persons operating motor vehicles must reduce operations by the use of car pools and increased use of public transportation and elimination of unnecessary operation.

Part B. Source Curtailment

Any person responsible for the operation of a source of air contaminants listed below shall take all required control actions for this Warning Level.

Source of Air Contaminants	Control Action
1. Coal or oil-fired electric power generating facilities.	a. Maximum reduction by utilization of fuels having lowest ash and sulfur content. b. Maximum utilization of mid-day (12 p.m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Warning Area.
2. Coal and oil-fired process steam generating facilities.	a. Maximum reduction by utilization of fuels having the lowest available ash and sulfur content. b. Maximum utilization of mid-day (12 p.m. to 4 p.m.) atmospheric turbulence for boiler lancing and soot blowing. c. Making ready for use a plan of action to be taken if an emergency develops.

Source of Air Contaminants

3. Manufacturing industries which require considerable lead time for shut-down including the following classifications:

Petroleum Refining.
Chemical Industries.
Primary Metal Industries.
Glass Industries.
Paper & Allied Products.
Other Energy and Fuel
Facilities.

4. Manufacturing industries which require relatively short lead times for shut-down including the following classifications:

Primary Metal Industries.
Chemical Industries.
Grain Industry.
Mineral Processing
Industries.

Control Action

- a. Maximum reduction of air contaminants from manufacturing operations by, if necessary, assuming reasonable economic hardships by postponing production and allied operation.
- b. Maximum reduction by deferring trade waste disposal operations which emit solid particles, gases, vapors, or malodorous substances.
- c. Maximum reduction of heat load demands for processing.
- d. Maximum utilization of mid-day (12 p.m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.
- a. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing or deferring to the extent possible without causing injury to persons or damage to equipment.
- b. Elimination of air contaminants from trade waste disposal processes which emit solid particles, gases, vapors or malodorous substances.
- c. Maximum reduction of heat load demands for processing.
- d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

Air Pollution Emergency Level

Part A. General

1. There shall be no open burning by any persons of tree waste, vegetation, refuse, or debris in any form.
2. The use of incinerators for the disposal of any form of solid or liquid waste shall be prohibited.
3. All places of employment described below shall immediately cease operations:
 - a. Mining and quarrying of nonmetallic minerals.
 - b. All construction work except that which must proceed to avoid emergent physical harm.
 - c. All manufacturing establishments except those required to have in force an air pollution emergency abatement strategies plan.
 - d. All wholesale trade establishments; i.e., places of business primarily engaged in selling merchandise to retailers, or industrial, commercial, institutional or professional users, or to other wholesalers, or acting as agents in buying merchandise for or selling merchandise to such persons or companies, except those engaged in the distribution of drugs, surgical supplies and food.
 - e. All offices of local, county and State government including authorities, joint meetings, and other public bodies excepting such agencies which are determined by the chief administrative officer of local, county, or State government, authorities, joint meetings and other public bodies to be vital for public safety and welfare and the enforcement of the provisions of this order.
 - f. All retail trade establishments except pharmacies, surgical supply distributors, and stores primarily engaged in the sale of food.
 - g. Banks, credit agencies other than banks, securities and commodities brokers, dealers, exchanges and services; offices of insurance carriers, agents and brokers, real estate offices.
 - h. Wholesale and retail laundries, laundry services and cleaning and dyeing establishments; photographic studios; beauty shops, barber shops, shoe repair shops.
 - i. Advertising offices; consumer credit reporting, adjustment and collection agencies; duplicating, addressing, blueprinting, photocopying, mailing, mailing list and stenographic services; equipment rental services, commercial testing laboratories.

- j. Automobile repair, automobile services, garages.
 - k. Establishments rendering amusement and recreational services including motion picture theaters.
 - l. Elementary and secondary schools, colleges, universities, professional schools, junior colleges, vocational schools, and public and private libraries.
4. All commercial and manufacturing establishments not included in this order will institute such actions as will result in maximum reduction of air contaminants from their operation by ceasing, curtailing, or postponing operations which emit air contaminants to the extent possible without causing injury to persons or damage to equipment.
 5. The use of motor vehicles is prohibited except in emergencies with the approval of local police or State Highway Patrol.

Part B. Source Curtailment

Any person responsible for the operation of a source of air contaminants listed below shall take all required control actions for this Emergency Level.

<u>Source of Air Contaminants</u>	<u>Control Action</u>
1. Coal or oil-fired electric power generating facilities.	a. Maximum reduction by utilization of fuels having lowest ash and sulfur content. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing. c. Maximum reduction by diverting electric power generation to facilities outside of Emergency Area.
2. Coal and oil-fired process steam generating facilities.	a. Maximum reduction by reducing heat and steam demands to absolute necessities consistent with preventing equipment damage. b. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing. c. Taking the action called for in the Abatement Strategies Plan for the Emergency Level.

Source of Air Contaminants

3. Manufacturing industries of the following classifications:

Primary Metals Industries.
Petroleum Refining.
Chemical Industries.
Mineral Processing Industries
Grain Industry.
Paper & Allied Products.
Other Energy and Fuel Facilities.

Control Action

- a. Elimination of air contaminants from manufacturing operations by ceasing, curtailing, postponing or deferring production and allied operations to the extent possible without causing injury to persons or damage to equipment.
- b. Elimination of air contaminants from trade waste disposal processes which emit solid particles, gases, vapors, or malodorous substances.
- c. Maximum reduction of heat load demands for processing.
- d. Maximum utilization of mid-day (12 m. to 4 p.m.) atmospheric turbulence for boiler lancing or soot blowing.

R23-25-12 STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

12.100 GENERAL PROVISIONS

12.101 Applicability

The provisions of this regulation apply to the owner or operator of any stationary source whose construction or modification is commenced after the effective date of each section and subsection. These standards shall be applied in conjunction with the procedure set out in R23-25-14.

12.102 Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in the Act or Section 1.040 of these regulations.

- (1) "Standard" means a standard of performance promulgated under this regulation.
- (2) "Stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant and which contains any one or combination of the following:
 - (a) Affected facilities.
 - (b) Existing facilities.
 - (c) Facilities of the type for which no standards have been promulgated in this regulation.
- (3) "Affected facility" means, with reference to a stationary source, any apparatus to which a standard is applicable.
- (4) "Owner or operator" means any person who owns, leases, operates, controls, or supervises an affected facility or a stationary source of which an affected facility is a part.
- (5) "Construction" means fabrication, erection, or installation of an affected facility.
- (6) "Modification" means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.
- (7) "Commenced" as applied to construction of a stationary source means that the owner or operator has obtained all necessary construction permits required by State air pol-

lution regulations and either has

- (a) begun, or caused to begin a continuous program of physical on-site construction of the source, or
 - (b) entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of construction of the source to be completed within a reasonable time.
- (8) "Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.
 - (9) "Nitrogen oxides" means all oxides of nitrogen except nitrous oxide, as measured by test methods set forth in this regulation.
 - (10) "Standard conditions" means a temperature of 293 K (68 degrees F) and a pressure of 101.3 kilopascals (29.92 in Hg.).
 - (11) "Proportional sampling" means sampling at a rate that produces a constant ratio of sampling rate to stack gas flow rate.
 - (12) "Isokinetic sampling" means sampling in which the linear velocity of the gas entering the sampling nozzle is equal to that of the undisturbed gas stream at the sample point.
 - (13) "Startup" means the setting in operation of an affected facility for any purpose.
 - (14) "Shutdown" means the cessation of operation of an affected facility for any purpose.
 - (15) "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.
 - (16) "One-hour period" means any 60 minute period commencing on the hour.
 - (17) "Reference method" means any method of sampling and analyzing for an air pollutant as described in Appendix A to this regulation.
 - (18) "Equivalent method" means any method of sampling and analyzing for air pollutant which has been demonstrated to the

Department's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.

- (19) "Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the Department's satisfaction to, in specific cases, produce results adequate for the Department's determination of compliance.
- (20) "Particulate matter" means any finely divided solid or liquid material, other than uncombined water, as measured by Method 5 of Appendix A to this regulation or an equivalent or alternative method.
- (21) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.
- (22) "Six-minute period" means any one of the 10 equal parts of a one-hour period.
- (23) "Continuous monitoring system" means the total equipment, required under the emission monitoring divisions in applicable subsections, used to sample and condition (if applicable), to analyze, and to provide a permanent record of emissions or process parameters.
- (24) "Monitoring device" means the total equipment, required under the monitoring of operations divisions in applicable subsections, used to measure and record (if applicable) process parameters.
- (25) "Existing facility" means, with reference to a stationary source, any apparatus of the type for which a standard is promulgated in this regulation and the construction or modification of which was commenced before the effective date of that standard; or any apparatus which could be altered in such a way as to be of that type;.
- (26) "Capital expenditure" means an expenditure for a physical or operational change to an existing facility which exceeds the product of the applicable "annual asset guideline repair allowance percentage" specified in the latest edition of Internal Revenue Service Publication 534 and the existing facility's basis, as defined by section 1012 of the Internal Revenue Code.

12.103 Abbreviations

The abbreviations used in this part have the following meanings:

A-ampere
 A.S.T.M.-American Society for
 Testing and Materials
 Btu-British thermal unit
 C-degree Celsius (centigrade)
 cal-calorie
 CdS-cadmium sulfide
 cfm-cubic feet per minute
 cu ft-cubic feet
 CO-carbon monoxide
 CO2-carbon dioxide
 dcf-dry cubic feet
 dcm-dry cubic meter
 dscm-dry cubic meter(s) at
 standard conditions
 dscf-dry cubic feet at
 standard conditions
 eq-equivalents
 F-degree Fahrenheit
 ft-feet
 g-gram(s)
 gal-gallon(s)
 g eq-gram equivalents
 gr-grain(s)
 hr-hour(s)
 HCl-hydrochloric acid
 Hg-mercury
 H2O-water
 H2S-hydrogen sulfide
 H2SO4-sulfuric acid
 Hz-hertz
 in.-inch(es)
 J-joule
 K-degree Kelvin
 k-1,000
 kg-kilogram(s)
 l-liter(s)
 lpm-liter(s) per minute
 lb-pound(s)
 m-meter(s)
 m**3-cubic meter

meq-milliequivalent(s)
 min-minute(s)
 mg-milligrams(s)-10**3 gram
 Mg-megagram-10**6 gram
 ml-milliliter(s)-10**3 liter
 mm-millimeter(s)-10**3 meter
 mol-mole
 mol. wt.-molecular weight
 mV-millivolt
 N2-nitrogen
 N-newton
 ng-nanogram-10**9 gram
 nm-nanometer(s)-10**9 meter
 NO-nitric oxide
 NO2-nitrogen dioxide
 NOx-nitrogen oxides
 O2-oxygen
 Pa-pascal
 ppb-parts per billion
 ppm-parts per million
 psia-pounds per square in
 absolute
 psig-pounds per square
 inch gage
 R-degree Rankine
 s-sec-second
 scf-cubic feet at standard
 conditions
 scfh-cubic feet per hour at
 standard conditions
 scm-cubic meter at standard
 conditions
 SO2-sulfur dioxide
 SO3-sulfur trioxide
 SOx-sulfur oxides
 sq ft-square feet
 std-at standard conditions
 ug-microgram(s)-10**6 gram
 V-volt
 W-watt

12.104 Determination of Construction or Modification

- (1) When requested to do so by an owner or operator, the Department will make a determination of whether action taken or intended to be taken by such owner or operator constitutes construction (including reconstruction) or modification or the commencement thereof within the meaning of this section.
- (2) The Department will respond to any request for a determin-

ation under paragraph (1) of this section within 30 days of receipt of such request.

12.105 Review of Plans

- (1) When requested to do so by an owner or operator, the Department will review plans for construction or modification for the purpose of providing technical advice to the owner or operator.
- (2)
 - (a) A separate request shall be submitted for each construction or modification project.
 - (b) Each request shall identify the location of such project, and be accompanied by technical information describing the proposed nature, size, design, and method of operation of each affected facility involved in such project, including information on any equipment to be used for measurement or control of emissions.
- (3) Nothing in this subsection or subsection 12.104 nor any action taken by the Department pursuant to this subsection or subsection 12.104 shall;
 - (a) Prevent the Department from making any such determination described above upon its own initiative;
 - (b) Prevent the Department from making any subsequent redetermination;
 - (c) Relieve an owner or operator of legal responsibility for compliance with any provision of this regulation or of any applicable Federal or local requirement, or
 - (d) Prevent the Department from implementing or enforcing any provision of this regulation or taking any other action authorized by law.

12.106 Notification and Record Keeping

- (1) Any owner or operator subject to the provisions of this regulation shall furnish the Department written notification as follows:
 - (a) A notification of the date construction (or reconstruction as defined under 12.113) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
 - (b) A notification of the anticipated date of initial startup of an affected facility not more than 60 days or less than 30 days prior to such date.

- (c) A notification of the actual date of initial startup of an affected facility within 15 days after such date.
 - (d) A notification of any physical or operational change to an existing facility which may increase the emission rate of any pollutant to which a standard applies, unless that change is specifically exempted under an applicable section or in 12.112(5) and the exemption is not denied under 12.112(4)(d). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Department may request additional relevant information subsequent to this notice.
 - (e) A notification of the date upon which demonstration of the continuous monitoring system performance commences in accordance with subsection 12.111(3). Notification shall be postmarked not less than 30 days prior to such date.
- (2) Any owner or operator subject to the provisions of this regulation shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
- (3) Each owner or operator required to install a continuous monitoring system shall submit a written report of excess emissions (as defined in applicable subsections) to the department for every calendar quarter. All quarterly reports shall be postmarked by the thirtieth day following the end of the each calendar quarter and shall include the following information:
- (a) The magnitude of excess emissions computed in accordance with subdivision h of subsection 11, any conversion factor or factors used, and the date and time of commencement and completion of each time period of excess emissions.
 - (b) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.
 - (c) The date and time identifying each period during which

the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

- (d) When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired, or adjusted, such information shall be stated in the report.
- (4) Any owner or operator subject to the provisions of this chapter shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this chapter recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports, and records.

12.107 Performance Tests

- (1) Within 60 days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility, and at such other times as may be required by the Department, the owner or operator of such facility shall conduct performance test(s) and furnish the Department a written report of the results of such performance test(s). The period during which performance tests are conducted shall be a period of trial operation pursuant to a permit to construct, and shall not be construed as allowing regular, commercial operation of the permitted facility.
- (2) Performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in each applicable subsection of section 12.400, unless the Department; (a) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, or (b) approves the use of an equivalent method, or (c) approves the use of an alternative method the results of which it has determined to be adequate for indicating whether a specific source is in compliance, or (d) waives the requirement for performance tests because the owner or operator of a source has demonstrated by other means to the Department's satisfaction that the affected facility is in compliance with the standard.
- (3) Performance tests shall be conducted under such conditions as the Department shall specify to the plant operator based on representative performance of the affected facility. The owner or operator shall make available to the Department such records as may be necessary to determine the conditions for the performance tests. Operations during periods of startup, shutdown, and malfunction shall

not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard.

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- (4) The owner or operator of an affected facility shall provide the Department 30 days prior notice of the performance test to afford the Department the opportunity to have an observer present.
- (5) The owner or operator of an affected facility shall provide, or cause to be provided, performance testing facilities as follows:
- (a) Sampling ports adequate for test methods applicable to such facility.
 - (b) Safe sampling platform(s).
 - (c) Safe access to sampling platform(s).
 - (d) Utilities for sampling and testing equipment.
- (6) Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the owner or operator's control, compliance may, upon the Department's approval, be determined using the arithmetic mean of the results of the two other runs or, the Department may require a new performance test.
- 12-10

12.108 Availability of Information

- (1) Emission data provided to, or otherwise obtained by, the Department in accordance with the provisions of this regulation shall be available to the public at the Department's offices.
- (2) As provided in division (1) of this subsection, any records, reports, or information provided to, or otherwise obtained by, the Department in accordance with the provisions of this regulation shall be available to the public, except that (a) upon a showing satisfactory to the Department by any person that such records, reports, or information, or particular part thereof (other than emission data), if made public, would divulge methods or processes entitled to protection as trade secrets of

such person, the Department shall consider such records, reports, or information, or particular part thereof, confidential in accordance with the purposes of Section 1905 of Title 18 of the United States Code, except that such records, reports, or information, or particular part thereof considered confidential, may be disclosed to other officers, employees, or authorized representatives of the Department and the United States concerned with carrying out the provisions of these regulations or when relevant in any proceeding under these regulations; and (b) information received by the Department solely for the purposes of subsections 12.104 and 12.105(1) and (2) shall not be disclosed by the Department if it is identified by the owner or operator and found by the Department to be a trade secret or confidential, commercial or financial information.

12.109 Compliance With Standards and Maintenance Requirements

- (1) Compliance with standards in this regulation, other than opacity standards, shall be determined only by performance tests established by subsection 12.107.
- (2) Compliance with opacity standards in this part shall be determined by conducting observations in accordance with Reference Method 9 in Appendix A of this regulation or any alternative method that is approved by the Department. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards. The results of continuous monitoring by transmissometer which indicate that the opacity at the time visual observations were made was not in excess of the standard are probative but not conclusive evidence of the actual opacity of an emission, provided that the source shall meet the burden of proving that the instrument used meets (at the time of the alleged violation) Performance Specification 1 in Appendix B of this regulation, has been properly maintained and (at the time of the alleged violation) calibrated, and that the resulting data have not been tampered with in any way.
- (3) The opacity standards set forth in this regulation shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard.

- (4) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
- (5) (a) An owner or operator of an affected facility may request the Department to determine opacity of emissions from the affected facility during the initial performance tests required by subsection 12.107.
- (b) Upon receipt from such owner or operator of the written report of the results of the performance tests required by subsection 12.107, the Department will make a determination concerning compliance with opacity and other applicable standards. If the Department determines that an affected facility is in compliance with all applicable standards for which performance tests are conducted in accordance with subsection 12.107 of this regulation but during the time such performance tests are being conducted fails to meet any applicable opacity standard, it shall notify the owner or operator and advise him that he may petition the Department within 10 days of receipt of notification to make appropriate adjustment to the opacity standard for the affected facility.
- (c) The Department will grant such a petition upon a demonstration by the owner or operator that the affected facility and associated air pollution control equipment was operated and maintained in a manner to minimize the opacity of emissions during the performance tests; that the performance tests were performed under the conditions established by the Department; and that the affected facility and associated air pollution control equipment were incapable of being adjusted or operated to meet the applicable opacity standard.

- (d) The Department will establish an opacity standard for the affected facility meeting the above requirements at a level at which the source will be able, as indicated by the performance and opacity tests, to meet the opacity standard at all times during which the source is meeting the mass or concentration emission standard. The Department will then promulgate the new opacity standard for such facility.

12.110 Circumvention

No owner or operator subject to the provisions of this regulation shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

12.111 Monitoring Requirements

- (1) For the purposes of this section, all continuous monitoring systems required under applicable subsections shall be subject to the provisions of this section, unless:
 - (a) The continuous monitoring system is subject to the provisions of divisions (3)(b) and (3)(c) of this subsection, or
 - (b) otherwise specified in an applicable subsection or by the Department.
- (2) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under subsection 12.107. Verification of operational status shall, as a minimum, consist of the following:
 - (a) For continuous monitoring systems referenced in division (3)(a) of this subsection, completion of the conditioning period specified by applicable requirements in Appendix B.
 - (b) For continuous monitoring systems referenced in division (3)(b) of this subsection, completion of seven days of operation.
 - (c) For monitoring devices referenced in applicable subsections, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.

- (3) During any performance tests required under subsection 12.107 or within 30 days thereafter and at such other times as may be required by the Department, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the Department within 60 days thereof two or, upon request, more copies of a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:
- (a) Continuous monitoring systems listed within this subdivision except as provided in division (3)(b) of this subsection shall be evaluated in accordance with the requirements and procedures contained in the applicable performance specification of Appendix B as follows:
 - (i) Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1.
 - (ii) Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2.
 - (iii) Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2.
 - (iv) Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.
 - (b) An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components except as referenced by division (3)(b)(iii) of this subsection shall comply with the following requirements:
 - (i) Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within ± 20 percent with a confidence level of 95 percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of Appendix B shall be used for demonstrating compliance with this specification.

- (ii) Continuous monitoring systems for measurement of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within ± 20 percent with a confidence level of 95 percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Performance Specification 2 of Appendix B shall be used for demonstrating compliance with this specification.
 - (iii) Owners or operators of all continuous monitoring systems installed on an affected facility prior to the effective date of this regulation are not required to conduct tests under divisions (3)(b)(i) and/or (ii) of this subsection unless requested by the Department.
- (c) All continuous monitoring systems referenced by division (3)(b) of this subsection shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and such improved systems shall be demonstrated to comply with applicable performance specifications under division (3)(a) of this subsection by September 11, 1979.
- (4) Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this regulation shall check the zero and span drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the 24-hour zero drift or 24-hour calibration draft limits of the applicable performance specifications in Appendix B are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four percent opacity. Unless otherwise approved by the Department, the following procedures, as applicable, shall be followed:
 - (a) For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their

manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixtures shall be the same composition as specified in Appendix B of this regulation. Every six months from date of manufacture, span and zero gases shall be reanalyzed by conducting triplicate, analyses with Reference Methods 6 for SO_2 , 7 for NO_x , and 3 for O_2 and CO_2 , respectively. The gases may be analyzed at less frequent intervals if longer shelf lives are guaranteed by the manufacturer.

- (b) For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition.
 - (c) For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.
- (5) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under division (4) of this subsection, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:
- (a) All continuous monitoring systems referenced by division (3)(a) and (b) of this subsection for measuring opacity of emissions shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 10-second period.
 - (b) All continuous monitoring systems referenced by division (3)(a) of this subsection for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

- (c) All continuous monitoring systems referenced by division (3)(b) of this subsection, except opacity, shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive one-hour period.
- (6) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B of this regulation shall be used.
- (7) When the effluents from a single affected facility or two or more affected facilities subject to the same emission standards are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems on each effluent or on the combined effluent. When the affected facilities are not subject to the same emission standards, separate continuous monitoring systems shall be installed on each effluent. When the effluent from one affected facility is released to the atmosphere through more than one point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by Department.
- (8) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six-minute averages and for systems other than opacity to one-hour averages for time periods under subsections 12.102(22) and (16), respectively. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each six-minute period. For systems other than opacity, one-hour averages shall be computed from four or more data points equally spaced over each one-hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this division. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent O_2 or lb/million BTU of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in subsections. After conversion into units of the standard, the data may be rounded to the same number of significant digits used in subsections to

specify the applicable standard (e.g. rounded to the nearest one percent opacity).

(a) After receipt and consideration of written application, the Department may approve alternatives to any monitoring procedures or requirements of this regulation including, but not limited to the following:

- (i) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this regulation would not provide accurate measurements due to liquid water or other interference caused by substances with the effluent gases.
- (ii) Alternative monitoring requirements when the affected facility is infrequently operated.
- (iii) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct for stack moisture conditions.
- (iv) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternative locations will enable accurate and representative measurements.
- (v) Alternative methods of converting pollutant concentration measurements to units of the standards.
- (vi) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells.
- (vii) Alternatives to the A.S.T.M. test methods or sampling procedures specified by any subsection.
- (viii) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The Department may require that such demonstration be performed for each affected facility.
- (ix) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two or more affected facilities are released to the atmosphere through more than one point.

12.112 Modification

- (1) Except as provided under divisions (4), (5) and (6) of this

subsection, any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

- (2) Emission rate shall be expressed as kg/hr of any pollutant discharged into the atmosphere for which a standard is applicable. The Department shall use the following to determine emission rate:
 - (a) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors," EPA Publication No. AP-42, or other emission factors determined by the Department to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.
 - (b) Material balances, continuous monitoring data, or manual emission tests in cases where utilization of emission factors as referenced in subdivision (2) (a) of this subsection does not demonstrate to the Department's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or clearly not increase, or where an owner or operator demonstrates to the Department's satisfaction that there are reasonable grounds to dispute the result obtained by the Department utilizing emission factors as referenced in subdivision (2) (a) of this subsection. When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in Appendix C of this regulation shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Department shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.
- (3) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this subsection any other facility within that source.

(4) A modification shall not be deemed to occur if an existing facility undergoes a physical or operational change where the owner or operator demonstrates to the Department's satisfaction (by any of the procedures prescribed under division (2) of this subsection) that the total emission rate of any pollutant has not increased from all facilities within the stationary source to which appropriate reference, equivalent, or alternative methods, as defined in 12.102, can be applied. An owner or operator may completely and permanently close any facility within a stationary source to prevent an increase in the total emission rate regardless of whether such reference, equivalent or alternative method can be applied, if the decrease in the emission rate from such closure can be adequately determined by any of the procedures prescribed under division (2) of this subsection. The owner or operator of the source shall have the burden of demonstrating compliance with this section.

(a) Such demonstration shall be in writing and shall include:

- (i) The name and address of the owner or operator.
- (ii) The location of the stationary source.
- (iii) A complete description of the existing facility undergoing the physical or operational change resulting in an increase in emission rate, any applicable control system, and the physical or operational change to such facility.
- (iv) The emission rates into the atmosphere from the existing facility of each pollutant to which a standard applies determined before and after the physical or operational change takes place, to the extent such information is known or can be predicted.
- (v) A complete description of each facility and the control systems, if any, for those facilities within the stationary source where the emission rate of each pollutant in question will be decreased to compensate for the increase in emission rate from the existing facility undergoing the physical or operational change.
- (vi) The emission rates into the atmosphere of the pollutants in question from each facility described under paragraph (4) (a) (v) of this subsection both before and after the improvement or installation of any applicable control system or any physical or operational changes to such facilities to reduce emission rate.

- (vii) A complete description of the procedures and methods used to determine the emission rates.
- (b) Compliance with division (d) of this subsection may be demonstrated by the methods listed in division (2) of this subsection, where appropriate. The required reduction in emission rate may be accomplished through the installation or improvement of a control system or through physical or operational changes to facilities including reducing the production of a facility or closing a facility.
- (c) Emission rates established for the existing facility which is undergoing a physical or operational change resulting in an increase in the emission rate, and established for the facilities described under paragraph (4) (a) (v) of this subsection shall become the baseline for determining whether such facilities undergo a modification or are in compliance with standards.
- (d) Any emission rate in excess of that rate established under subdivision (4) (c) of this subsection shall be a violation of these regulations except as otherwise provided in division (5) of this subsection. However, any owner or operator electing to demonstrate compliance under division (4) must apply to the Department to obtain the use of any exemptions under subdivisions (5) (b), (5) (c), and (5) (d) of this subsection. The Department will grant such exemption only if, in his judgement, the compliance originally demonstrated under this division will not be circumvented or nullified by the utilization of the exemption.
- (e) The Department may require the use of continuous monitoring devices and compliance with necessary reporting procedures for each facility described in paragraph (4) (a) (iii) and (4) (a) (v) of this subsection.
- (5) The following shall not, by themselves, be considered modifications under this subsection:
 - (a) Maintenance, repair, and replacement which the Department determines to be routine for a source category, subject to the provisions of division (3) of this subsection and 12.113.
 - (b) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on the stationary source containing that facility.
 - (c) An increase in the hours of operation.

- (d) Use of an alternative fuel or raw material if, prior to the date any standard under this subsection becomes applicable to that source type, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications, as amended, prior to the change.
- (e) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Department determines to be less environmentally beneficial.
- (f) The relocation or change in ownership of an existing facility.
- (6) Special provisions set forth under an applicable division of this subsection shall supersede any conflicting provisions of this subsection.
- (7) Within 180 days of the completion of any physical or operational change subject to the control measures specified in divisions (1) or (4) of this subsection, compliance with all applicable standards must be achieved.

12.113 Reconstruction

- (1) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.
- (2) "Reconstruction" means the replacement of components of an existing facility to such an extent that:
 - (a) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and
 - (b) It is technologically and economically feasible to meet the applicable standards set forth in this section.
- (3) "Fixed capital cost" means the capital needed to provide all the depreciable components.
- (4) If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Department of the proposed replacements. The notice must be postmarked 60 days (or as soon as practicable) before construction of the re-

placements is commenced and must include the following information:

- (a) Name and address of the owner or operator.
 - (b) The location of the existing facility.
 - (c) A brief description of the existing facility and the components which are to be replaced.
 - (d) A description of the existing air pollution control equipment and the proposed air pollution control equipment.
 - (e) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new facility.
 - (f) The estimated life of the existing facility after the replacements.
 - (g) A discussion of any economic or technical limitations the facility may have in complying with applicable standards of performance after the proposed replacements.
- (5) The Department will determine, within 30 days of the receipt of the notice required by division (4) of this subsection and any additional information he may reasonably require, whether the proposed replacement constitutes reconstruction.
- (6) The Department's determination under division (5) shall be based on:
- (a) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;
 - (b) The estimated life of the facility after the replacements compared to the life of a comparable entirely new facility;
 - (c) The extent to which the components being replaced cause or contribute to the emissions from the facility; and;
 - (d) Any economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.
- (7) Individual divisions of this subsection may include specific provisions which refine and delimit the concept of reconstruction set forth in this subsection.

12.200 - 12.300 (RESERVED)

12.400 STANDARDS OF PERFORMANCE

12.401 Standards of Performance for Fossil-Fuel Steam Generators

(1) Applicability and Designation of Affected Facility

(a) The affected facilities to which the provisions of this subsection apply are:

(i) Each fossil fuel-fired steam generating unit of more than 73 megawatts heat input rate (250 million Btu per hour).

(ii) Each fossil fuel and wood residue-fired steam generating unit capable of firing fossil fuel at a heat input rate of more than 73 megawatts (250 million Btu per hour).

(b) Any change to an existing fossil fuel-fired steam generating unit to accommodate the use of combustible materials, other than fossil fuels as defined in this subsection shall not bring that unit under the applicability of this subsection.

(2) Definitions

As use in this subsection, all terms not defined herein shall have the meaning given them in the Act, and in subsection 12.102 of this regulation.

(a) "Fossil fuel-fired steam generating unit" means furnace or boiler used in the process of burning fossil fuel for the purpose of producing steam by heat transfer.

(b) "Fossil fuel" means natural gas, petroleum, coal, and any form of solid, liquid, or gaseous fuel derived from such materials for the purpose of creating useful heat.

(c) "Fossil fuel and wood residue-fired steam generating unit" means a furnace or boiler used in the process of burning fossil fuel and wood residue for the purpose of producing steam by heat transfer.

(d) "Wood residue" means bark, sawdust, slabs, chips, shavings, mill trim, and other wood products derived from wood processing and forest management operations.

(e) "Coal refuse" means waste-products of coal mining, cleaning, and coal preparation operations (e.g. culm, gob, etc.) containing coal, matrix material, clay, and other organic and inorganic material.

- (f) "Coal" means all solid fuels classified as anthracite, bituminous, subbituminous, or lignite by the American Society for Testing Material. Designation D 388-66.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:
- (i) Contain particulate matter in excess of 43 nanograms per joule heat input (0.10 lb per million Btu) derived from fossil fuel or fossil fuel and wood residue.
 - (ii) Exhibit greater than 20 percent opacity except for one six-minute period per hour of not more than 27 percent opacity.

(4) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of:
- (i) 340 nanograms per joule heat input (0.80 lb per million Btu) derived from liquid fossil fuel or liquid fossil fuel and wood residue.
 - (ii) 520 nanograms per joule heat input (1.2 lb per million Btu) derived from solid fossil fuel or solid fossil fuel and wood residue.
- (b) When different fossil fuels are burned simultaneously in any combination, the applicable standard (in ng/J) shall be determined by proration using the following formula

$$PS (SO_2) = \frac{y(340) + z(520)}{y + z}$$

where:

PS SO₂ is the prorated standard for sulfur dioxide when burning different fuels simultaneously, in nanograms per joule heat input derived from all fossil fuels

fired or from all fossil fuels and wood residue fired,
y is the percentage of total heat input derived from
liquid fossil fuel, and

z is the percentage of total heat input derived from
solid fossil fuel.

- (c) Compliance shall be based on the total heat input from
all fossil fuels burned, including gaseous fuels.

(5) Standard for Nitrogen Oxides

- (a) On and after the date on which the performance test
required to be conducted by subsection 12.107 is com-
pleted, no owner or operator subject to the provisions
of this subsection shall cause to be discharged into
the atmosphere from any affected facility any gases
which contain nitrogen oxides, expressed as NO₂ in ex-
cess of:
- (i) 86 nanograms per joule heat input (0.20 lb per mil-
lion Btu) derived from gaseous fossil fuel or gas-
eous fossil fuel and wood residue.
 - (ii) 130 nanograms per joule heat input (0.30 lb per
million Btu) derived from liquid fossil fuel or
liquid fossil fuel and wood residue.
 - (iii) 300 nanograms per joule heat input (0.70 lb per
million Btu) derived from solid fossil fuel or
solid fossil fuel and wood residue (except lignite
or a solid fossil fuel containing 25 percent, by
weight, or more of coal refuse).
 - (iv) 260 nanograms per joule heat input (0.60 lb per
million Btu) derived from lignite or lignite and
wood residue (except as provided under paragraph
(a) (v) of this subsection).
 - (v) 340 nanograms per joule heat input (0.80 lb per
million Btu) derived from lignite which is mined
in North Dakota, South Dakota or Montana and which
is burned in a cyclone-fired unit.
- (b) Except as provided under subdivisions (c) and (d) of
this subsection, when different fossil fuels are burned
simultaneously in any combination, the applicable
standard (in ng/J) is determined by proration using the
following formula:

$$PS (NO_x) = \frac{w(260) + x(86) + y(130) + z(300)}{w+x+y+z}$$

where:

PS NO_x =is the prorated standard for nitrogen oxides when burning different fuels simultaneously, in nanograms per joule heat input derived from all fossil fuels fired or from all fossil fuels and wood residue fired;

w =is the percentage of total heat input derived from lignite;

x =is the percentage of total heat input derived from gaseous fossil fuel;

y =is the percentage of total heat input derived from liquid fossil fuel; and

z =is the percentage of total heat input derived from solid fossil fuel (except lignite).

- (c) When a fossil fuel containing at least 20 percent, by weight, of coal refuse is burned in combination with gaseous, liquid, or other solid fossil fuel or wood residue, the standard for nitrogen oxides does not apply.
- (d) Cyclone-fired units which burn fuels containing at least 25 percent of lignite that is mined in North Dakota, South Dakota, or Montana remain subject to paragraph (a) (v) of this subsection regardless of the types of fuel burned in combination with that lignite.

(6) Emission and Fuel Monitoring

- (a) Each owner or operator shall install, calibrate, maintain, and operate continuous monitoring systems for measuring the opacity of emissions, sulfur dioxide emissions, nitrogen oxides emissions, and either oxygen or carbon dioxide except as provided in subdivision (b) of this division.
- (b) Certain of the continuous monitoring system requirements under subdivision (a) of this division do not apply to owners or operators under the following conditions:
 - (i) For a fossil fuel-fired steam generator that burns only gaseous fossil fuel, continuous monitoring systems for measuring the opacity of emissions and sulfur dioxide emissions are not required.
 - (ii) For a fossil fuel-fired steam generator that does not use a flue gas desulfurization device, a con-

tinuous monitoring system for measuring sulfur dioxide emissions is not required if the owner or operator monitors sulfur dioxide emissions by fuel sampling and analysis under subdivision (d) of this division.

- (iii) Notwithstanding 12.111(2), installation of a continuous monitoring system for nitrogen oxides may be delayed until after the initial performance tests under 12.107 have been conducted. If the owner or operator demonstrates during the performance test that emissions of nitrogen oxides are less than 70 percent of the applicable standards in 12.401(5) a continuous monitoring system for measuring nitrogen oxides emissions is not required. If the initial performance test results show that nitrogen oxide emissions are greater than 70 percent of the applicable standard, the owner or operator shall install a continuous monitoring system for nitrogen oxides within one year after the date of the initial performance tests under 12.107 and comply with all other applicable monitoring requirements under this part.
 - (iv) If an owner or operator does not install any continuous monitoring systems for sulfur oxides and nitrogen oxides, as provided under paragraphs (b) (i) and (b) (iii) or paragraphs (b) (ii) and (b) (iii) of this division a continuous monitoring system for measuring either oxygen or carbon dioxide is not required.
- (c) For performance evaluations under 12.111(3) and calibration checks under 12.11(4) the following procedures shall be used:
- (i) Reference Method 6 or 7, as applicable, shall be used for conducting performance evaluations of sulfur dioxide and nitrogen oxides continuous monitoring systems.
 - (ii) Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of Appendix B to this regulation.
 - (iii) For affected facilities burning fossil fuel(s), the span value for a continuous monitoring system measuring the opacity of emission shall be 80, 90, or 100 percent and for a continuous monitoring system measuring sulfur oxides or nitrogen oxides the span value shall be determined as follows:

(In parts per million)		
Fossil fuel	Span value for sulfur dioxide	Span value for nitrogen oxides
Gas	(1)	500
Liquid	1,000	500
Solid	1,500	500
Combinations	$1,000y + 1,500z$	$500(x+y) + 1,000z$

1 Not applicable.

where:

x=the fraction of total heat input derived from gaseous fossil fuel, and

y=the fraction of total heat input derived from liquid fossil fuel, and

z=the fraction of total heat input derived from solid fossil fuel.

(iv) All span values computed under paragraph (c) (iii) of this division for burning combinations of fossil fuels shall be rounded to the nearest 500 ppm.

(v) For a fossil fuel-fired steam generator that simultaneously burns fossil fuel and nonfossil fuel, the span value of all continuous monitoring systems shall be subject to the Department's approval.

(d) (Reserved)

(e) For any continuous monitoring system installed under subdivision (a) of this division, the following conversion procedures shall be used to convert the continuous monitoring data into units of the applicable standards (ng/J, lb/million Btu):

(i) When a continuous monitoring system for measuring oxygen is selected, the measurement of the pollutant concentration and oxygen concentration shall each be on a consistent basis (wet or dry). Alternative procedures approved by the Department shall be used when measurements are on a wet basis. When measurements are on a dry basis, the following conversion procedure shall be used:

$$E = CP \frac{20.9}{20.9 - \text{percent O}_2}$$

where:

E, C, P and %O₂, are determined under subdivision (f) of this division.

- (ii) When a continuous monitoring system for measuring carbon dioxide is selected, the measurement of the pollutant concentration and carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure shall be used:

$$E = CFC \frac{100}{20.9 - \text{percent CO}_2}$$

where:

E, C, FC, and %CO₂ are determined under subdivision (f) of this subdivision.

- (f) The values used in the equations under paragraphs (e) (i) and (ii) of this division are derived as follows:
- (i) E=pollutant emissions, ng/J (lb/million Btu).
 - (ii) C=pollutant concentration, ng/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each one-hour period by $4.15 \times 10^{+4} M$ ng/dscm per ppm ($2.59 \times 10^{+9} M$ lb/dscf per ppm) where M=pollutant molecular weight, g/g-mole (lb lb-mole). M=64.07 for sulfur dioxide and 46.01 for nitrogen oxides.
 - (iii) %O₂, %CO₂ = oxygen or carbon dioxide volume (expressed as percent),
 - (iv) F, Fc = a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (F) and a factor representing a ratio of the volume of carbon dioxide generated to the calorific value of the fuel combusted (Fc), respectively. Values of F and Fc are given as follows:
 - ((a)) For anthracite coal as classified according to A.S.T.M. D 388-66, $F=2.723 \times 10^{+7}$ dscm/J (10,140 dscf/million Btu) and $Fc=0.532 \times 10^{+7}$ scm CO₂/J (1,980 scf CO₂/million Btu).
 - ((b)) For subbituminous and bituminous coal as classified according to A.S.T.M.D 388-66. F=

2.637×10^{-7} dscm/J (9,820 dscf/million Btu) and $F_c = 0.486 \times 10^{-7}$ scm CO₂/J (1,310 scf CO₂/million Btu).

((c)) For liquid fossil fuels including crude, residual, and distillate oils, $F = 2.476 \times 10^{-7}$ dscm/J (9,220 dscf/million Btu) and $F_c = 0.384 \times 10^{-7}$ scm CO₂/J (1,430 scf CO₂/million Btu).

((d)) For gaseous fossil fuels, $F = 2.347 \times 10^{-7}$ dscm/J (8,740 dscf/million Btu). For natural gas, propane, and butane fuels, $F_c = 0.279 \times 10^{-7}$ scm CO₂/J (1,040 scf CO₂/million Btu) for natural gas, 0.322×10^{-7} scm CO₂/J (1,200 scf CO₂/million Btu) for propane, and 0.338×10^{-7} scm CO₂/J (1,260 scf CO₂/million Btu) for butane.

((e)) For bark $F = 2.589 \times 10^{-7}$ dscm/J (9,640 dscf/million Btu) and $F_c = 1.000 \times 10^{-7}$ scm CO₂/J (1,860 scf CO₂/million Btu). For wood residue other than bark $F = 2.492 \times 10^{-7}$ dscm/J (9,280 dscf/million Btu) and $F_c = 0.494 \times 10^{-7}$ scm CO₂/J (1,840 scf CO₂/million Btu).

((f)) For lignite coal as classified according to A.S.T.M. D 388-66, $F = 2.659 \times 10^{-7}$ dscm/J (9900 dscf/million Btu) and $F_c = 0.516 \times 10^{-7}$ scm CO₂/J (1920 scf CO₂/million Btu).

(v) The owner or operator may use the following equations to determine an F factor (dscm/J or dscf/million Btu) on a dry basis (if it is desired to calculate F on a wet basis, consult the Department or F_c factor (scm CO₂/J, or scf CO₂/million Btu) on either basis in lieu of the F or F_c factors specified in subdivision (f) (4) of this division:

$$F = \frac{[227.2 (\%H) + 95.5 (\%C) + 35.6 (\%S) + 8.7 (\%N) - 28.7 (\%O)]}{GCV} \quad (\text{metric units})$$

$$F = 10^{-6} \frac{[3.64\%H + 1.53\%C + 0.57\%S + 0.14\%N - 0.46\%O]}{GCV} \quad (\text{English units})$$

$$F_c = \frac{2.0 \times 10^{-5} (\text{pct. C})}{GCV} \quad (\text{metric units})$$

$$F_c = 321 \times 10^{-3} \%C$$

GCV

(English units)

- ((a)) H,C,S,N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fired, using A.S.T.M. method D3178-74 or D3176 (solid fuels), or computed from results using A.S.T.M. methods D1137-53(70), D1945-64(73), or D1946-67(72) (gaseous fuels) as applicable.
- ((b)) GCV is the gross calorific value (kJ/kg, Btu/lb) of the fuel combusted, determined by the A.S.T.M. test methods d 2016-66(72) for solid fuels and D 1826-64(70) for gaseous fuels as applicable.
- ((c)) For affected facilities which fire both fossil fuel and nonfossil fuels, the F or Fc value shall be subject to the Department's approval.
- (vi) For affected facilities firing combinations of fossil fuels or fossil fuels and wood residue, the F or Fc factors determined by paragraphs (f) (iv) or (f) (v) of this division shall be prorated in accordance with the applicable formula as follows:
- $$F = x_1F_1 + \dots + x_nF_n \quad \text{or}$$
- $$F_c = x_1(F_c)_1 + \dots + x_n(F_c)_n$$
- where:
- x_n =the fraction of total heat input derived from each type of fuel (e.g. natural gas, bituminous coal, wood residue, etc.)
- F_n or $(F_c)_n$ =the applicable F or Fc factor for each fuel type determined in accordance with paragraphs (f) (iv) and (f) (v) of this division.
- n =the number of fuels being burned in combination.
- ((c)) For affected facilities which fire both fossil fuels and nonfossil fuels, the F or Fc value shall be subject to the Department's approval.
- (g) For the purpose of reports required under division 12.106(3), periods of excess emissions that shall be reported are defined as follows:

- (i) Opacity. Excess emissions are defined as any six-minute period during which the average opacity of emissions exceeds 20 percent opacity, except that one six-minute average per hour of up to 27 percent opacity need not be reported.
- (ii) Sulfur dioxide. Excess emissions for affected facilities are defined as:
 - ((a)) Any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard under division 12.401(4).
 - ((b)) (Reserved)
- (iii) Nitrogen oxides. Excess emissions for affected facilities using a continuous monitoring system for measuring nitrogen oxides are defined as any three-hour period during which the average emissions (arithmetic average of three contiguous one-hour periods) exceed the applicable standards under division 12.401(5).

(7) Test Methods and Procedures

- (a) The reference methods in Appendix A of this regulation, except as provided in division 12.107 (2), shall be used to determine compliance with the standards as prescribed in divisions 12.401(3), 12.401(4) and 12.401(5) as follows:
 - (i) Method 1 for selection of sampling site and sample traverses.
 - (ii) Method 3 for gas analysis to be used when applying Reference Methods 5, 6, and 7.
 - (iii) Method 5 for concentration of particulate matter and the associated moisture content.
 - (iv) Method 6 for concentration of SO₂ and
 - (v) Method 7 for concentration of NO_x.
- (b) For Method 5, Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or

other factors, may be approved by the Department. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 433 degrees K (320 degrees F).

- (c) For Methods 6 and 7, the sampling site shall be the same as that selected for Method 5. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than 1 m (3.28 ft).
- (d) For Method 6, the minimum sampling time shall be 20 minutes and the minimum sampling volume 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two samples shall constitute one run. Samples shall be taken at approximately 30-minute intervals.
- (e) For Method 7, each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value.
- (f) For each run using the methods specified by paragraphs (a) (iii), (a) (iv) and (a) (v) of this division, the emissions expressed in ng/J (lb/million Btu) shall be determined by the following equation:

$$E = CF \frac{20.9}{20.9 - \text{percent O}_2}$$

where:

- (i) E=pollutant emission ng/J (lb/million Btu).
- (ii) C=pollutant concentration, ng/dscm (lb/dscf), determined by Method 5, 6, or 7.
- (iii) Percent O₂=oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated or grab sampling and analysis procedures of Method 3 as applicable. The sample shall be obtained as follows:
 - ((a)) For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained simultaneously at the same point in the duct as used to obtain the samples for Methods 6 and 7 determinations, respectively. For Method 7, the oxygen sample shall be obtained using the grab sampling and analysis procedures of Method 3.
 - ((b)) For determination of particulate emissions, the oxygen sample shall be obtained simultaneously

by traversing the duct at the same sampling location used for each run of Method 5 under subdivision (b) of this division. Method 1 shall be used for selection of the number of traverse points except that no more than 12 sample points are required.

(iv) P = a factor as determined in paragraphs (f) (iv), (v) or (vi) of division 12.401(6).

(g) When combinations of fossil fuels or fossil fuel and wood residue are fired, the heat input, expressed in watts (Btu/hr), is determined during each testing period by multiplying the gross calorific value of each fuel fired (in J/kg or Btu/lb) by the rate of each fuel burned (in kg/sec or lb/hr). Gross calorific values are determined in accordance with A.S.T.M. methods D 2015-66-(72) (solid fuels), D 240-64(73) (liquid fuels), or D 1826-64(7) (gaseous fuels) as applicable. The method used to determine calorific value of wood residue must be approved by the Department. The owner or operator shall determine the rate of fuels burned during each testing period by suitable methods and shall confirm the rate by a material balance over the steam generation system.

12.402 Standards of Performance for Incinerators

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each incinerator of more than 45 metric tons per day charging rate (50 tons/day), which is the affected facility.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

(a) "Incinerator" means any furnace used in the process of burning solid waste for the purpose of reducing the volume of the waste by removing combustible matter.

(b) "Solid waste" means refuse, more than 50 percent of which is municipal type waste consisting of mixture of paper, wood, yard wastes, food wastes, plastics, leather, rubber, and other combustibles, and non-combustible materials such as glass and rock.

(c) "Day" means 24 hours.

(3) Standard for Particulate Matter

On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.18 g/dscm (0.08 gr/dscf) corrected to 12 percent CO₂.

(4) Monitoring of Operations

The owner or operator of any incinerator subject to the provisions of this subsection shall record the daily charging rates and hours of operation.

(5) Test Methods and Procedures

- (a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in division (3) of this subsection as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content;
 - (ii) Method 1 for sample and velocity traverses;
 - (iii) Method 2 for velocity and volumetric flow rate; and
 - (iv) Method 3 for gas analysis and calculation of excess air, using the integrated sample technique.
- (b) For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) If a wet scrubber is used, the gas analysis sample shall reflect flue gas conditions after the scrubber, allowing for carbon dioxide absorption by sampling the gas on the scrubber inlet and outlet sides according to either the procedure under subdivisions (c)(i) through (c)(v) of this division or the procedure under subdivisions (c)(i), (c)(ii) and (c)(vi) of this subdivision as follows:
 - (i) The outlet sampling site shall be the same as for the particulate matter measurement. The inlet site shall be selected according to Method 1, or as specified by the Department.

- (ii) Randomly select 9 sampling points within the cross-section at both the inlet and outlet sampling sites. Use the first set of three for the first run, the second set for the second run, and the third set for the third run.
- (iii) Simultaneously with each particulate matter run, extract and analyze for CO₂ an integrated gas sample according to Method 3, traversing the three sample points and sampling at each point for equal increments of time. Runs shall be conducted at both inlet and outlet sampling sites.
- (iv) Measure the volumetric flow rate at the inlet during each particulate matter run according to Method 2, using the full number of traverse points. For the inlet make two full velocity traverses approximately one hour apart during each run and average the results. The outlet volumetric flow rate may be determined from the particulate matter run (Method 5).

- (v) Calculate the adjusted CO₂ percentage using the following equation:

$$(\% \text{ CO}_2)_{\text{adj}} = (\% \text{ CO}_2)_{\text{di}} (Q_{\text{di}}/Q_{\text{do}})$$

where:

(% CO₂)_{adj} is the adjusted CO₂ percentage which removes the effect of CO₂ absorption and dilution air,

(% CO₂)_{di} is the percentage of CO₂, measured before the scrubber, dry basis,

Q_{di} is the volumetric flow rate before the scrubber, average of two runs, dscf/min (using Method 2), and

Q_{do} is the volumetric flow rate after the scrubber, dscf/min (using Methods 2 and 5).

- (vi) Alternatively, the following procedures may be substituted for the procedures under subdivisions (c)(iii), (iv), and (v) of this division.

- ((a)) Simultaneously with each particulate matter run, extract and analyze for CO₂, O₂, and N₂ an integrated gas sample according to Method 3, traversing the three sample points and sampling for equal increments of time at each point. Conduct the runs at both the inlet and outlet sampling sites.
- ((b)) After completing the analysis of the gas sample, calculate the percentage of excess air (% EA) for both the inlet and outlet sampling sites using equation 3-1 in Appendix A to this regulation.
- ((c)) Calculate the adjusted CO₂ percentage using the following equation:

$$(\% \text{ CO}_2)_{\text{adj}} = (\% \text{ CO}_2)_{\text{di}} \frac{100 + (\% \text{ EA})_i}{100 + (\% \text{ EA})_o}$$

where:

(% CO₂)_{adj} is the adjusted outlet CO₂ percentage,

(% CO₂)_{di} is the percentage of CO₂ measured before the scrubber, dry basis,

(% EA)_i is the percentage of excess air at the inlet, and

(% EA)_o is the percentage of excess air at the outlet.

- ((d)) Particulate matter emissions, expressed in g/dscm, shall be corrected to 12 percent CO₂ by using the following formula:

$$c_{12} = \frac{12c}{\% \text{ CO}_2}$$

where:

c₁₂ is the concentration of particulate matter corrected to 12 percent CO₂,

- c is the concentration of particulate matter as measured by Method 5,
- % CO₂ is the percentage of CO₂ as measured by Method 3, or when applicable, the adjusted outlet CO₂ percentage as determined by subdivision (c) of this division.

12.403 Standards of Performance for Portland Cement Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in portland cement plants: kiln, clinker cooler, raw mill system, finish mill system, raw mill dryer, raw material storage, clinker storage, conveyor transfer points, bagging and bulk loading and unloading systems.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Portland cement plant" means any facility manufacturing portland cement by either the wet or dry process.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any kiln any gases which:

- (i) Contain particulate matter in excess of 0.15 kg per metric ton of feed (dry basis) to the kiln (0.30 lb per ton).

- (ii) Exhibit greater than 10 percent opacity.

- (b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the

provisions of this subsection shall cause to be discharged into the atmosphere from any clinker cooler any gases which:

- (i) Contain particulate matter in excess of 0.050 kg per metric ton of feed (dry basis) to the kiln (0.10 lb per ton).
- (ii) Exhibit 10 percent opacity, or greater.
- (c) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility, other than the kiln and clinker cooler, any gases which exhibit 10 percent opacity or greater.

(4) Monitoring of Operations

- (a) The owner or operator of any portland cement plant subject to the provisions of this subsection shall record the daily production rates and kiln feed rates.

(5) Test Methods and Procedures

- (a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standards prescribed in division (3) of this section subsection as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content;
 - (ii) Method 1 for sample and velocity traverses;
 - (iii) Method 2 for velocity and volumetric flow rate; and
 - (iv) Method 3 for gas analysis.
- (b) For Method 5, the minimum sampling time and minimum sample volume for each run, except when process variables or other factors justify otherwise to the satisfaction of the Department shall be as follows:
 - (i) 60 minutes and 0.85 dscm (30.0 dscf) for the kiln.

- (ii) 60 minutes and 1.15 dscm (40.6 dscf) for the clinker cooler.
- (c) Total kiln feed rate (except fuels), expressed in metric tons per hour on a dry basis, shall be determined during each testing period by suitable methods; and shall be confirmed by a material balance over the production system.
- (d) For each run, particulate matter emissions, expressed in g/metric ton of kiln feed, shall be determined by dividing the emission rate in g/hr by the kiln feed rate. The emission rate shall be determined by the equation, $g/hr = Q_s \times c$, where Q = volumetric flow rate of the total effluent in dscm/hr as determined in accordance with subdivision (a)(iii) of this division and c = particulate concentration in g/dscm as determined in accordance with subdivisions (a) and (c) of this division.

12.404 Standards of Performance for Nitric Acid Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each nitric acid production unit, which is the affected facility.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in Section 12.102 of this regulation.

- (a) "Nitric acid production unit" means any facility producing weak nitric acid by either the pressure or atmosphere pressure process.
- (b) "Weak nitric acid" means acid which is 30 to 70 percent in strength.

(3) Standard for Nitrogen Oxides

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:

(i) Contain nitrogen oxides, expressed as NO₂, in excess of 1.5 kg per metric ton of acid produced (3.0 lb per ton), the production being expressed as 100 percent nitric acid.

(ii) Exhibit 10 percent opacity, or greater.

(4) Emission Monitoring

- (a) A continuous monitoring system for the measurement of nitrogen oxides shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111(4) to this regulation, shall be nitrogen dioxide (NO₂). The span shall be set at 500 ppm of nitrogen dioxide. Reference Method 7 shall be used for conducting monitoring system performance evaluations under 12.111(3).
- (b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be established by measuring emissions with the continuous monitoring system concurrent with measuring emissions with the applicable reference method tests. Using only that portion of the continuous monitoring emission data that represents emission measurements concurrent with the reference method test periods, the conversion factor shall be determined by dividing the reference method test data averages by the monitoring data averages to obtain a ratio expressed in units of the applicable standard to units of the monitoring data, i.e., kg/metric ton per ppm (lb/short ton per ppm). The conversion factor shall be re-established during any performance test under subsection 12.107 or any continuous monitoring system performance evaluation under subsection 12.111(3).
- (c) The owner or operator shall record the daily production rate and hour of operation.
- (d) (Reserved)

- (e) For the purpose of reports required under subsection 12.106(3), periods of excess emissions that shall be reported are defined as any three-hour period during which the average nitrogen oxides emissions (arithmetic average of three contiguous one-hour periods) as measured by a continuous monitoring system exceed the standard under subsection 12.404(3)(a).

(5) Test Methods and Procedures

- (a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in division (3) of this subsection as follows:
- (i) Method 7 for the concentration of NO_x ;
 - (ii) Method 1 for sample and velocity traverses;
 - (iii) Method 2 for velocity and volumetric flow rate; and
 - (iv) Method 3 for gas analysis.
- (b) For Method 7, the sample site shall be selected according to Method 1 and the sampling point shall be the centroid of the stack or duct or at a point no closer to the walls than 1 m (3.28 ft). Each run shall consist of at least four grab samples taken at approximately 15-minute intervals. The arithmetic mean of the samples shall constitute the run value. A velocity traverse shall be performed once per run.
- (c) Acid production rate, expressed in metric tons per hour of 100 percent nitric acid, shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.
- (d) For each run, nitrogen oxides, expressed in g/metric ton of 100 percent nitric acid, shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation,

$$\text{g/hr} = Q_S \times c$$

where:

Q_s = volumetric flow rate of the effluent in dscm/hr, as determined in accordance with subdivision (a)(iii) of this division and c = NO_x concentration in g/dscm, as determined in accordance with subdivision (a)(i) of this division.

12.405 Standards of Performance for Sulfuric Acid Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to each sulfuric acid production unit, which is the affected facility.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Sulfuric acid production unit" means any facility producing sulfuric acid by the contact process by burning elemental sulfur, alkylation acid, hydrogen sulfide, organic sulfides and mercaptans, or acid sludge, but does not include facilities where conversion to sulfuric acid is utilized primarily as a means of preventing emissions to the atmosphere of sulfur dioxide or other sulfur compounds.
- (b) "Acid mist" means sulfuric acid mist, as measured by Method 8 of Appendix A to this regulation or an equivalent or alternative method.

(3) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain sulfur dioxide in excess of 2 kg per metric ton of acid produced (4 lb per ton), the production being expressed as 100 percentage H_2SO_4 .

(4) Standard for Acid Mist

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which:
- (i) Contain acid mist, expressed as H_2SO_4 , in excess of 0.075 kg per metric ton of acid produced (0.15 lb per ton), the production being expressed as 100 percent H_2SO_4 .
- (ii) Exhibit 10 percent opacity, or greater.

(5) Emission Monitoring

- (a) A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under subsection 12.111(4) except that only the sulfur dioxide (SO_2). Reference Method 8 shall be used for conducting monitoring system performance evaluations under subsection (12.111(3) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span shall be set at 1000 ppm of sulfur dioxide.
- (b) The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/short ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999AP-13 and calculating the appropriate conversion factor for each eight-hour period as follows:

$$CF = K \frac{1.000 - 0.015r}{r - s}$$

where:

CF = conversion factor (kg/metric ton per ppm, lb/short ton per ppm).

k = Constant derived from material balance. For determining CF in metric units, $k = 0.0653$. For determining CF in English units, $k = 0.1306$.

r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Department's approval.

s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under subdivision (a) of this division.

- (c) The owner or operator shall record all conversion factors and values under subdivision (b) of this division from which they were computed (i.e., CF, r, and s).
- (d) (Reserved)
- (e) For the purpose of reports under subsection 12.106(3), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards under subsection 12.405(3).

(6) Test Methods and Procedures

- (a) The reference methods in Appendix A to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standards prescribed in divisions (3) and (4) of this subsection as follows:
 - (i) Method 8 for the concentrations of SO_2 and acid mist;
 - (ii) Method 1 for sample and velocity traverses;
 - (iii) Method 2 for velocity and volumetric flow rate; and
 - (iv) Method 3 for gas analysis.
- (b) The moisture content can be considered to be zero. For Method 8 the sampling time for each run shall be at least 60 minutes and the minimum sample

volume shall be 1.15 dscm (40.6 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the Department.

- (c) Acid production rate, expressed in metric tons per hour of 100 percent H_2SO_4 , shall be determined during each testing period by suitable methods and shall be confirmed by a material balance over the production system.
- (d) Acid mist and sulfur dioxide emissions, expressed in g/metric ton of 100 percent H_2SO_4 , shall be determined by dividing the emission rate in g/hr by the acid production rate. The emission rate shall be determined by the equation, $g/hr = Q_s \times c$, where Q_s = volumetric flow rate of the effluent in dscm/hr as determined in accordance with subdivision (a)(iii) of this division and c = acid mist and SO_2 concentrations in g/dscm as determined in accordance with subdivision (a)(i) of this division.

12.406 Standards of Performance for Asphalt Concrete Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each asphalt concrete plant. For the purpose of this subsection, an asphalt concrete plant is comprised only of any combination of the following: Dryers; systems for screening, handling, storing, and weighing hot aggregate; systems for loading, transferring, and storing mineral filler; systems for mixing asphalt concrete; and the loading, transfer, and storage systems associated with emission control systems.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Asphalt concrete plant" means any facility, as described in division (1) of this subsection, used to manufacture asphalt concrete by heating and drying aggregate and mixing with asphalt cements.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

(i) Contain particulate matter in excess of 90 mg/dscm (0104 gr/dscf).

(ii) Exhibit 20 percent opacity, or greater.

(4) Test Methods and Procedures

(a) The reference methods in Appendix A to this regulation, except as provided for in division 12.107(2), shall be used to determine compliance with the standards prescribed in division (3) of this subsection as follows:

(i) Method 5 for the concentration of particulate matter and the associated moisture content.

(ii) Method 1 for sample and velocity traverses,

(iii) Method 2 for velocity and volumetric flow rate, and

(iv) Method 3 for gas analysis.

(b) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department.

12.407 Standards of Performance for Petroleum Refineries

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in petroleum refineries: fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and all Claus sulfur recovery plants except Claus plants of 20 long tons per day (LTD) or less associated with a small petroleum refinery. The Claus sulfur recovery plant need not be physically located within the boundaries of a petroleum refinery to be an affected facility, provided it processes gases produced within a petroleum refinery.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102:

- (a) "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through redistillation, cracking or reforming of unfinished petroleum derivatives.
- (b) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.
- (c) "Process gas" means any gas generated by a petroleum refinery process unit, except fuel gas and process upset gas as defined in this subsection.
- (d) "Fuel gas" means any gas which is generated by a petroleum refinery process unit and which is combusted, including any gaseous mixture of natural gas and fuel gas which is combusted.
- (e) "Process upset gas" means any gas generated by a petroleum refinery process unit as a result of start-up, shut-down, upset or malfunction.
- (f) "Refinery process unit" means any segment of the petroleum refinery in which a specific processing operation is conducted.
- (g) "Fuel gas combustion device" means any equipment, such as process heaters, boilers and flares used to combust fuel gas, but does not include fluid coking unit and fluid catalytic cracking unit incinerator-waste heat boilers or facilities in which gases are combusted to produce sulfur or sulfuric acid.
- (h) "Coke burn-off" means the coke removed from the surface of the fluid catalytic cracking unit catalyst by combustion in the catalyst regenerator. The rate of coke burn-off is calculated by the formula specified in division (7) of this subsection.
- (i) "Claus sulfur recovery plant" means a process unit which recovers sulfur from hydrogen sulfide by a vapor-phase catalytic reaction of sulfur dioxide and hydrogen sulfide.
- (j) "Oxidation control system" means an emission control system which reduces emissions from sulfur recovery plants by converting these emissions to sulfur dioxide.
- (k) "Reduction control system" means an emission control system which reduces emissions from sulfur recovery plants by converting these emissions to hydrogen sulfide.
- (l) "Reduced sulfur compounds" mean hydrogen sulfide (H₂S), carbonyl sulfide (COS) and carbon disulfide (CS₂).

- (m) "Small petroleum refinery" means a petroleum refinery which has a crude oil processing capacity of 50,000 barrels per stream day or less, and which is owned or controlled by a refinery with a total combined crude oil processing capacity of 137,500 barrels per stream day or less.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any fluid catalytic cracking unit catalyst regenerator:

(i) Particulate matter in excess of 1.0 kg/1000 kg (1.0 lb/1000 lb) of coke burn-off in the catalyst regenerator.

(ii) Gases exhibiting greater than 30 percent opacity, except for one six-minute average opacity reading in any one hour period.

- (b) Where the gases discharged by the fluid catalytic cracking unit catalyst regenerator pass through an incinerator or waste heat boiler in which auxiliary or supplemental liquid or solid fossil fuel is burned, particulate matter in excess of that permitted by paragraph (a)(i) of this section may be emitted to the atmosphere, except that the incremental rate of particulate matter emissions shall not exceed 43.0 g/MJ (0.10 lb/million Btu) of heat input attributable to such liquid or solid fossil fuel.

(4) Standard for Carbon Monoxide

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from the fluid catalytic cracking unit catalyst regenerator any gases which contain carbon monoxide in excess of 0.050 per cent by volume.

(5) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall:

(i) Burn in any fuel gas combustion device any fuel gas which contains hydrogen sulfide in excess of 230 mg/dscm (0.10 gr/dscf), except that the gases resulting from the combustion of fuel gas may be treated to control sulfur dioxide emissions provided the owner or operator demonstrates to the satisfaction of the Depart-

ment that this is as effective in preventing sulfur dioxide emissions to the atmosphere as restricting the H₂S concentration in the fuel gas to 230 mg/dscm or less. The combustion in a flare of process upset gas, or fuel gas which is released to the flare as a result of relief valve leakage, is exempt from this paragraph.

(ii) Discharge or cause the discharge of any gases into the atmosphere from any Claus sulfur recovery plant containing in excess of:

((a)) 0.025 percent by volume of sulfur dioxide at zero percent oxygen on a dry basis if emissions are controlled by an oxidation control system, or a reduction control system followed by incineration, or

((b)) 0.030 percent by volume of reduced sulfur compounds and 0.0010 percent by volume of hydrogen sulfide calculated as sulfur dioxide at zero percent oxygen on a dry basis if emissions are controlled by a reduction control system not followed by incineration.

(b) (Reserved)

(6) Emission Monitoring

(a) Continuous monitoring systems shall be installed, calibrated, maintained, and operated by the owner or operator as follows:

(i) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator. The continuous monitoring system shall be spanned at 60, 70, or 80 percent opacity.

(ii) An instrument for continuously monitoring and recording the concentration of carbon monoxide in gases discharged into the atmosphere from fluid catalytic cracking unit catalyst regenerators. The span of this continuous monitoring system shall be 1,000 ppm.

(iii) A continuous monitoring system for the measurement of sulfur dioxide in the gases discharged into the atmosphere from the combustion of fuel gases (except where a continuous monitoring system for the measurement of hydrogen sulfide is installed under paragraph (a) (iv) of this division. The pollutant gas used to prepare calibration gas mixtures under paragraph 2.1, Performance Specification 2 and for calibration checks under division 12.111(4) to this regulation, shall be sulfur dioxide (SO₂). The span shall be set at 100 ppm. For

conducting monitoring system performance evaluations under division 12.111(3), Reference Method 6 shall be used.

- (iv) An instrument for continuously monitoring and recording concentrations of hydrogen sulfide in fuel gases burned in any fuel gas combustion device, if compliance with 12.407(5) (a) (i) is achieved by removing H₂S from the fuel gas before it is burned; fuel gas combustion devices having a common source of fuel gas may be monitored at one location, if monitoring at this location accurately represents the concentration of H₂S in the fuel gas burned. The span of this continuous monitoring system shall be 300 ppm.
 - (v) An instrument for continuously monitoring and recording concentrations of SO₂ in the gases discharged into the atmosphere from any Claus sulfur recovery plant if achieved through the use of an oxidation control system or a reduction control system followed by incineration. The span of this continuous monitoring system shall be set at 500 ppm.
 - (vi) An instrument(s) for continuously monitoring and recording the concentration of H₂S and reduced sulfur compounds in the gases discharged into the atmosphere from any Claus sulfur recovery plant if compliance with 12.407(5) (a) (ii) is achieved through the use of a reduction control system not followed by incineration. The span(s) of this continuous monitoring system(s) shall be set at 20 ppm for monitoring and recording the concentration of H₂S and 600 ppm for monitoring and recording the concentration of reduced sulfur compounds.
- (b) (Reserved)
- (c) The average coke burn-off rate (thousands of kilogram/hr) and hours of operation for any fluid catalytic cracking unit catalyst regenerator subject to divisions (3) and (4) of this subsection shall be recorded daily.
 - (d) For any fluid catalytic cracking unit catalyst regenerator which is subject to division (3) of this subsection and which utilizes an incinerator-waste heat boiler to combust the exhaust gases from the catalyst regenerator, the owner or operator shall record daily the rate of combustion of liquid or solid fossil fuels (liters/hr or kilograms/hr) and the hours of operation during which liquid or solid fossil fuels are combusted in the incinerator-waste heat boiler.
 - (e) For the purpose of reports under division 12.106(3) periods of excess emissions that shall be reported are defined as follows:

- (i) Opacity. All one-hour periods which contain two or more six-minute periods during which the average opacity as measured by the continuous monitoring system exceeds 30 percent.
- (ii) Carbon monoxide. All hourly periods during which the average carbon monoxide concentration in the gases discharged into the atmosphere from any fluid catalytic cracking unit catalyst regenerator subject to 12.407(4) exceeds 0.050 percent by volume.
- (iii) Sulfur dioxide.
 - ((a)) Any three-hour period during which the average concentration of H₂S in any fuel gas combusted in any fuel gas combustion device subject to 12.407(5) (a) (i) exceeds 230 mg/dscm (0.10 gr/dscf), if compliance is achieved by removing H₂S from the fuel gas before it is burned; or any three-hour period during which the average concentration of SO₂ in the gases discharged into the atmosphere from any fuel gas combustion device subject to 12.407(5) (a) (i) exceeds the level specified in 12.407(5) (a) (i) if compliance is achieved by removing SO₂ from the combusted fuel gases.
 - ((b)) Any twelve-hour period during which the average concentration of SO₂ in the gases discharged into the atmosphere from any Claus sulfur recovery plant subject to 12.407(5) (a) (ii) exceeds 250 ppm at zero percent oxygen on a dry basis if compliance with 12.407(5) (b) is achieved through the use of an oxidation control system followed by incineration; or any twelve-hour period during which the average concentration of H₂S, or reduced sulfur compounds in the gases discharged into the atmosphere of any Claus sulfur plant subject to 12.407(5) (a) (ii) ((b)) exceeds 10 ppm or 300 ppm, respectively, at zero percent oxygen and on a dry basis if compliance is achieved through the use of a reduction control system not followed by incineration.
 - (iv) Any six-hour period during which the average emissions (arithmetic average of six contiguous one-hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the standard under division 12.407(5).

(7) Test Methods and Procedures

- (a) For the purpose of determining compliance with paragraph 12.407(3) (a) (i), the following reference methods and calculation procedures shall be used:

- (i) For gases released to the atmosphere from the fluid catalytic cracking unit catalyst regenerator;
 - ((a)) Method 5 for the concentration of particulate matter and moisture content,
 - ((b)) Method 1 for sample and velocity traverses, and
 - ((c)) Method 2 for velocity and volumetric flow rate.
- (ii) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times may be approved by the Department when process variables or other factors preclude sampling for at least 60 minutes.
- (iii) For exhaust gases from the fluid catalytic cracking unit catalyst regenerator prior to the emission control system: the integrated sample techniques of Method 3 and Method 4 for gas analysis and moisture content, respectively; Method 1 for velocity traverses; and Method 2 for velocity and volumetric flow rate.
- (iv) Coke burn-off rate shall be determined by the following formula:

$$Rc = 0.2982 Qre(\%CO_2 + \%CO) + 2.088 Qra - 0.0994 Qre \frac{(\%CO + \%CO_2 + \%O_2)}{2}$$

(Metric Units)

$$Rc = 0.0186 Qre(\%CO_2 + \%CO) + 0.1303 Qra - 0.0062 Qre \frac{(\%CO + \%CO_2 + \%O_2)}{2}$$

(English Units)

where:

- Rc = coke burn-off rate, kg/hr (English units: lb/hr).
- 0.2982 = metric units material balance factor divided by 100, kg-min/hr-m**3
- 0.0186 = English units material balance factor divided by 100, lb-min/hr-ft**3
- Qre = fluid catalytic cracking unit catalyst regenerator exhaust gas flow rate before entering the emission control system, as determined by Method 2, dscm/min (English units: dscf/min).
- %CO₂ = percent carbon dioxide by volume, dry basis, as determined by Method 3.
- %CO = percent carbon monoxide by volume, dry basis, as determined by Method 3.
- %O₂ = percent oxygen by volume, dry basis, as determined by Method 3.
- 2.088 = metric units material balance factor divided by 100, kg-min/hr-m**3.

0.1303 = English units material balance factor divided by 100, lb-min/hr-ft**3.

Qra = air rate to fluid catalytic cracking unit catalyst regenerator, as determined from fluid catalytic cracking unit control room instrumentation dscm/min (English units: dscf/min).

0.0994 = metric units material balance factor divided by 100, kg-min/hr-m**3.

0.0062 = English units material balance factor by 100, lb-min/hr-ft**3.

(v) Particulate emissions shall be determined by the following equation:

$$RE = (60 \times 10^{-6}) QrvC3 \text{ (Metric Units)}$$

$$RE = (8.57 \times 10^{-3}) QrvC3 \text{ (English Units)}$$

where:

RE = particulate emission rate, kg/hr (English units: lb/hr).

60×10^{-6} = metric units conversion factor, min-kg/hr-mg.

8.57×10^{-3} = English units conversion factor, min-lb/hr-gr.

Qrv = volumetric flow rate of gases discharged into the atmosphere from the fluid catalytic cracking unit catalyst regenerator following the emission control system, as determined by Method 2, dscm/min (English units: dscf/min).

C3 = particulate emission concentration discharged into the atmosphere, as determined by Method 5, mg/dscm (English units: gr/dscf).

(vi) For each run, emissions expressed in kg (English units: lb/1000 lb) of coke burn-off in the catalyst regenerator shall be determined by the following equation:

$$Rs = 1000 \frac{RE}{RC} \text{ (Metric or English Units)}$$

where:

Rs = particulate emission rate, kg/100 kg (English units: lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator.

1000 = conversion factor, kg to 1000 kg (English units: lb to 1000 lb).

RE = particulate emission rate, kg/hr (English units: lb/hr).

Rc = coke burn-off rate, kg/hr (English units: lb/hr).

- (vii) In those instances in which auxiliary liquid or solid fossil fuels are burned in an incinerator-waste heat boiler, the rate of particulate matter emissions permitted under subdivision (3) (b) of this subsection must be determined. Auxiliary fuel heat input, expressed in millions of cal/hr. (Millions of Btu/hr) shall be calculated for each run by fuel flow rate measurement and analysis of the liquid or solid auxiliary fossil fuels. For each run, the rate of particulate emissions permitted under subdivision (3) (b) of this subsection shall be calculated from the following equation:

$$Rs = 1.0 + \frac{0.18}{Rc} H \quad (\text{Metric Units})$$

or

$$Rs = 1.0 + \frac{0.10}{Rc} H \quad (\text{English Units})$$

where:

Rs = allowable particulate emission rate, kg/1000 kg (lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit catalyst regenerator.

1.0 = emission standard, 1.0 kg/1000 kg (1.0 lb/1000 lb) of coke burn-off in the fluid catalytic cracking unit regenerator.

0.18 = Metric units maximum allowable incremental rate of particulate emissions, g/million cal.

0.10 = English units maximum allowable incremental rate of particulate emissions lb/million Btu.

H = heat input from solid or liquid fossil fuel, million cal/hr (million Btu/hr).

Rc = coke burn-off rate, kg/hr (lb/hr).

- (b) For the purpose of determining compliance with division (4) of this subsection, the integrated sample technique of Method 10 shall be used. The sample shall be extracted at a rate proportional to the gas velocity at a sampling point near the centroid of the duct. The sampling time shall not be less than 60 minutes.
- (c) For the purpose of determining compliance with 12.407(5) (a) (i), Method 11 shall be used to determine the concen-

tration of H₂S and Method 6 shall be used to determine the concentration of SO₂.

- (i) If Method 11 is used, the gases sampled shall be introduced into the sampling train at approximately atmospheric pressure. Where refinery fuel gas lines are operating at pressures substantially above atmosphere, this may be accomplished with a flow control valve. If the line pressure is high enough to operate the sampling train without a vacuum pump, the pump may be eliminated from the sampling train. The sample shall be drawn from a point near the centroid of the fuel gas line. The minimum sampling time shall be 10 minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples of equal sampling time shall constitute one run. Samples shall be taken at approximately 1-hour intervals. For most fuel gases, sample times exceeding 20 minutes may result in depletion of the collecting solution, although fuel gases containing low concentrations of hydrogen sulfide may necessitate sampling for longer periods of time.
 - (ii) If Method 6 is used, Method 1 shall be used for velocity traverses and Method 2 for determining velocity and volumetric flow rate. The sampling site for determining SO₂ concentration by Method 6 shall be the same as for determining volumetric flow rate by Method 2. The sampling point in the duct for determining SO₂ concentration by Method 6 shall be at the centroid of the cross section if the cross sectional area is less than 5 square meters (54 square feet) or at a point no closer to the walls than 1 m (39 inches) if the cross sectional area is 5 square meters or more and the centroid is more than one meter from the wall. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. The minimum sampling time shall be 10 minutes and the minimum sampling volume 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two samples of equal sampling time shall constitute one run. Samples shall be taken at approximately 1-hour intervals.
- (d) For the purpose of determining compliance with 12.407(5)
- (a) (i), Method 6 shall be used to determine the concentration of SO₂ and Method 15 shall be used to determine the concentration of H₂S and reduced sulfur compounds.
 - (i) If Method 6 is used, the procedure outlined in paragraph (c) (ii) of this subsection shall be followed except that each run shall span a minimum of four consecutive hours of continuous sampling. A number of separate samples may be taken for each run, provided the total sampling time of these samples adds up to a

minimum of four consecutive hours. Where more than one sample is used, the average SO₂ concentration for the run shall be calculated as the time weighted average of the SO₂ concentration for each sample according to the formula:

$$CR = CS_1 \frac{ts_1}{T} + \dots + CS_n \frac{ts_n}{T}$$

where:

CR = SO₂ concentration for the run.

N = Number of samples.

CS_n = SO₂ concentration for sample n.

ts_n = Continuous sampling time of sample n.

T = total continuous sampling time of all N samples.

- (ii) If Method 15 is used, each run shall consist of 16 samples taken over a minimum of three hours. The sampling point shall be at the centroid of the cross section of the duct if the cross sectional area is less than 5 sq. m (54 sq. ft.) or at a point no closer to the walls than 1 m (39 inches) if the cross sectional area is 5 sq. m or more and the centroid is more than 1 meter from the wall. To insure minimum residence time for the sample inside the sample lines, the sampling rate shall be at least 3 liters/minute (0.1 cubic feet/min). The SO₂ equivalent for each run shall be calculated as the arithmetic average of the SO₂ equivalent of each sample during the run. Reference Method 4 shall be used to determine the moisture content of the gases. The sampling point for Method 4 shall be adjacent to the sampling point for Method 15. The sample shall be extracted at a rate proportional to the gas velocity at the sampling point. Each run shall span a minimum of four consecutive hours of continuous sampling. A number of separate samples may be taken for each run provided the total sampling time of these samples adds up to a minimum of four consecutive hours. Where more than one sample is used, the average moisture content for the run shall be calculated as the time weighted average of the moisture content of each sample according to the formula:

$$Bwo = B_1 \frac{[t_1]}{T} + \dots + B_n \frac{[t_n]}{T}$$

Bwo = Proportion by volume of water vapor in the gas stream for the run.

N = number of samples.

Bn = Proportion by volume of water vapor in the gas stream for the sample n.

tn = Continuous sampling time for sample n.

T = Total continuous sampling time of all N samples.

- (e) An owner or operator of an affected facility may request the department to determine opacity of emissions from the affected facility during any performance test covered under 12.107. In such event the provisions of 12.109(4) (b), (4) (c), and (4) (d) shall apply.

12.408 Standards of Performance for Storage Vessels for Petroleum Liquids

(1) Applicability and Designation of Affected Facility

- (a) Except as provided in subdivision (1) (b) of this subsection, the affected facility to which this subsection applies is each storage vessel for petroleum liquids which has a storage capacity greater than 151,412 liters (40,000 gallons).
- (b) This subsection does not apply to storage vessels for petroleum or condensate stored, processed, and/or treated at a drilling and production facility prior to custody transfer.

(2) Definitions

As used in this section, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Storage vessel" means any tank, reservoir, or container used for the storage of petroleum liquids, but does not include:
- (i) Pressure vessels which are designed to operate in excess of 15 pounds per square inch gauge without emissions to the atmosphere except under emergency conditions.
 - (ii) Subsurface caverns or porous rock reservoirs, or
 - (iii) Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.

- (b) "Petroleum liquids" means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils as specified in A.S.T.M. D39669, gas turbine fuels oils Numbers 2-GT through 4-GT as specified in A.S.T.M. D2880-71, or diesel fuel oils Numbers 2-D and 4-D as specified in A.S.T.M. D975-68.
- (c) "Petroleum refinery" means any facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other products through distillation of petroleum or through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.
- (d) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.
- (e) "Hydrocarbon" means any organic compound consisting predominantly of carbon and hydrogen.
- (f) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.
- (g) "Custody transfer" means the transfer of produced petroleum and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportation.
- (h) "Drilling and production facility" means all drilling and servicing equipment, wells, flow lines, separators, equipment, gathering lines, and auxiliary non-transportation-related equipment used in the production of petroleum but does not include natural gasoline plants.
- (i) "True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods described in American Petroleum Institute Bulletin 2517, Evaporation Loss from Floating Roof Tanks, 1962.

- (j) "Floating roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.
- (k) "Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.
- (l) "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile non-viscous petroleum liquids, except liquefied petroleum gases, as determined by ASTM-D-323-58 (reapproved 1968).

(3) Standard for Hydrocarbons

The owner or operator of any storage vessel to which this subsection applies shall store petroleum liquids as follows:

- (a) If the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 78 mm Hg. (1.5 psia) but not greater than 570 mm Hg (11.1 psia), the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents.
- (b) If the true vapor pressure of the petroleum liquid as stored is greater than 570 mm hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.

(4) Monitoring of Operations

- (a) The owner or operator of any storage vessel to which this subsection applies shall for each such storage vessel maintain a file of each type of petroleum liquid stored, of the typical Reid vapor pressure of each type of petroleum liquid stored, and of the dates of storage. Dates on which the storage vessel is empty shall be shown.

- (b) The owner or operator of any storage vessel to which this subsection applies shall for each such storage vessel determine and record the average monthly storage temperature and true vapor pressure of the petroleum liquid stored at such temperature if:
 - (i) The petroleum liquid has a true vapor pressure, as stored, greater than 26 mm Hg (0.5 psia) but less than 78 mm Hg (1.5 psia) and is stored in a storage vessel other than one equipped with a floating roof, a vapor recovery system or their equivalents; or
 - (ii) The petroleum liquid has a true vapor pressure, as stored, greater than 470 mm Hg (9.1 psia) and is stored in a storage vessel other than one equipped with a vapor recovery system or its equivalent.
- (c) The average monthly storage temperature is an arithmetic average calculated for each calendar month, or portion thereof if storage is for less than a month, from bulk liquid storage temperatures determined at least once every 7 days.
- (d) The true vapor pressure shall be determined by the procedures in American Petroleum Institute (API) Bulletin 2517. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the Department requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, that Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available on request to the Department when typical Reid vapor pressure is used.

12.409 Standards of Performance for Secondary Lead Smelters

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in secondary lead smelters: Pot furnaces of more than 250 kg (550 lb) charging capacity,

blast (cupola) furnaces, and reverberatory furnaces.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Reverberatory furnace" includes the following types of reverberatory furnaces: stationary, rotating, rocking, and tilting.
- (b) "Secondary lead smelter" means any facility producing lead from a lead-bearing scrap material by smelting to the metallic form.
- (c) "Lead" means elemental lead or alloys in which the predominant component is lead.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from a blast (cupola) or reverberatory furnace any gases which:
 - (i) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).
 - (ii) Exhibit 20 percent opacity or greater.
- (b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this regulation shall discharge or cause the discharge into the atmosphere from any pot furnace any gases which exhibit 10 percent opacity or greater.

(4) Test Methods and Procedures

- (a) The reference methods appended to this regulation, except as provided for in subsection 12.107(2) shall be used to determine compliance with the standards prescribed in division (3) of this subsection as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content,

- (ii) Method 1 for sample and velocity traverses,
- (iii) Method 2 for velocity and volumetric flow rate, and
- (iv) Method 3 for gas analysis.

- (b) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Particulate sampling shall be conducted during representative periods of furnace operation, including charging and tapping.

12.410 Standards of Performance for Secondary Brass and Bronze Ingot Production Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in secondary brass or bronze ingot production plants; Reverberatory and electric furnaces of 1,000 kg (2,205 lb) or greater production capacity and blast (cupola) furnaces of 250 kg/hr (550 lb/hr) or greater production capacity.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Brass or bronze" means any metal alloy containing copper as its predominant constituent, and lesser amounts of zinc, tin, lead, or other metals.
- (b) "Reverberatory furnace" includes the following types of reverberatory furnaces: stationary, rotating, rocking, and tilting.
- (c) "Electric furnace" means any furnace which uses electricity to produce over 50 percent of the heat required in the production of refined brass or bronze.
- (d) "Blast furnace" means any furnace used to recover metal from slag.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from a reverberatory furnace any gases which:
 - (i) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).
 - (ii) Exhibit 20 percent opacity or greater.
- (b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any blast (cupola) or electric furnace any gases which exhibit 10 percent opacity or greater.

(4) Test Methods and Procedures

- (a) The reference methods appended to this part, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standards prescribed in division (3) of this subsection as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 5, the sampling time for each run shall be at least 120 minutes and the sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Particulate matter sampling shall be conducted during representative periods of charging and refining, but not during pouring of the heat.

12.411 Standards of Performance for Iron and Steel Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each basic oxygen process furnace.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Basic oxygen process furnace" (BOPF) means any furnace producing steel by charging scrap steel, hot metal, and flux materials into a vessel and introducing a high volume of an oxygen-rich gas.
- (b) "Steel production cycle" means the operations required to produce each batch of steel and includes the following major functions: Scrap charging, preheating (when used), hot metal charging, primary oxygen blowing, additional oxygen blowing (when used), and tapping.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall discharge or cause the discharge into the atmosphere from any affected facility any gases which:

- (i) Contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

- (ii) (Reserved)

(4) (Reserved)

(5) Test Methods and Procedures

- (a) The reference methods appended to this regulation, except as provided for in Section 12.107(2), shall be used to determine compliance with the standards prescribed in division (3) of this subsection as follows:

- (i) Method 5 for concentration of particulate matter and associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 5, the sampling for each run shall continue for an integral number of cycles with total duration of at least 60 minutes. The sampling rate shall be at least 0.9 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. A cycle shall start at the beginning of either the scrap preheat or the oxygen blow and shall terminate immediately prior to tapping.

12.412 Standards of Performance for Sewage Treatment Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each incinerator which burns the sludge produced by municipal sewage treatment facilities.

The affected facility is each incinerator that combusts wastes containing more than 10 percent sewage sludge (dry basis) produced by municipal sewage treatment plants, or each incinerator that charges more than 1000 kg (2205 lb) per day municipal sewage sludge (dry basis).

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

(3) Standard for Particulate Matter

On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator of any sewage sludge incinerator subject to the provisions of this subsection shall discharge into the atmosphere of:

- (a) Particulate matter at a rate in excess of 0.65 g/kg dry sludge input (1.30 lb/ton dry sludge input).
- (b) Any gases which exhibit 20 percent opacity or greater.

(4) Monitoring of Operations

The owner or operator of any sludge incinerator subject to the provisions of this subsection shall:

- (a) Install, calibrate, maintain, and operate a flow measuring device which can be used to determine either the mass or volume of sludge charged to the incinerator. The flow measuring device shall have an accuracy of ± 5 percent over its operating range.
- (b) Provide access to the sludge charged so that a well-mixed representative grab sample of the sludge can be obtained.
- (c) Install, calibrate, maintain, and operate a weighing device for determining the mass of any municipal solid waste charged to the incinerator when sewage sludge and municipal solid waste are incinerated together. The weighing device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) The reference methods appended to this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standards prescribed in division (3) of this subsection as follows:
 - (i) Method 5 for concentration of particulate matter and associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.015 dscm/min (0.53 dscf/min), except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department.
- (c) Dry sludge charging rate shall be determined as follows:
 - (i) Determine the mass (S_m) or volume (S_v) of sludge charged to the incinerator during each run using a flow measuring device meeting the requirements of division (4)(a)(i) of this subsection. If total input during a run is measured by a flow measuring device, such readings shall be used. Otherwise, record the flow measuring device readings at 5-minute intervals during a run.

Determine the quantity charged during each interval by averaging the flow rates at the beginning and end of the interval and then multiplying the average for each interval by the time for each interval. Then add the quantity for each interval to determine the total quantity charged during the entire run, (S_m) or (S_v).

- (ii) Collect samples of the sludge charged to the incinerator in non-porous collecting jars at the beginning of each run and at approximately 1-hour intervals thereafter until the test ends, and determine for each sample the dry sludge content (total solids residue) in accordance with "224 G. Method for Solid and Semisolid Samples," Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition, American Public Health Association, Inc., New York, N.Y., 1971, pp.539-41, except that:
 - ((a)) Evaporating dishes shall be ignited to at least 103°C rather than the 550°C specified in step 3(a)(1).
 - ((b)) Determination of volatile residue, step 3(b) may be deleted.
 - ((c)) The quantity of dry sludge per unit sludge charged shall be determined in terms of either R_{dv} (metric units: mg dry sludge/liter sludge charged or English units: lb/ft³) or R_{dm} (metric units: mg dry sludge/mg sludge charged or English units: lb/lb).
- (iii) Determine the quantity of dry sludge per unit sludge charged in terms of either R_{dv} or R_{dm} .
 - ((a)) If the volume of sludge charged is used:

$$S_d = (60 \times 10^{-3}) \frac{R_{dv} S_v}{T} \text{ (Metric Units)}$$

or

$$S_d = (8.021) \frac{R_{dv} S_v}{T} \text{ (English Units)}$$

where:

S_d = average dry sludge charging rate during the run, kg/hr (English units: lb/hr).

R_{dv} = average quantity of dry sludge per unit volume of sludge charged to the incinerator, mg/l (English units: lb/ft³).

S_v = sludge charged to the incinerator during the run, m³ (English units: gal).

T = duration of run, min (English units: min).

60×10^{-3} = metric units conversion factor, l-kg-min/m³-mg-hr.

8.021 = English units conversion factor, ft³-min/gal-hr.

((b)) If the mass of sludge charged is used:

$$S_d = (60) \frac{R_{dm} S_m}{T} \text{ (Metric or English Units)}$$

where:

S_d = average dry sludge charging rate during the run, kg/hr (English units: lb/hr).

R_{dm} = average ratio of quantity of dry sludge to quantity of sludge charged to the incinerator mg/mg (English units: lb/lb).

S_m = sludge charged during the run, kg (English units: lb).

T = duration of run, min (Metric or English units).

60 = conversion factor, min/hr (Metric or English units).

(d) Particulate emission rate shall be determined by:

$$C_{aw} = C_s Q_s \text{ (Metric or English Units)}$$

where:

C_{aw} = particulate matter mass emissions, mg/hr (English units: lb/hr).

C_s = particulate matter concentration, mg/m³ (English units: lb/dscf).

Q_s = volumetric stack gas flow rate, dscm/hr (English units: dscf/hr). Q_s and C_s shall be determined using Methods 2 and 5, respectively.

(e) Compliance with 12.412(3) shall be determined as follows:

$$C_{ds} = (10^{**}-3) \frac{C_{aw}}{S_d} \quad (\text{Metric Units})$$

or

$$C_{ds} = (2000) \frac{C_{aw}}{S_d} \quad (\text{English Units})$$

where:

C_{ds} = particulate emission discharge, g/kg dry sludge
English units: lb/ton dry sludge).

$10^{**}-3$ = Metric conversion factor, g/mg.

2000 = English conversion factor, lb/ton.

12.413 Standards of Performance for Primary Copper Smelters

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in primary copper smelters: Dryer, roaster, smelting furnace, and copper converter.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

(a) "Primary copper smelter" means any installation or any intermediate process engaged in the production of copper from copper sulfide ore concentrates through the use of pyrometallurgical techniques.

(b) "Dryer" means any facility in which a copper sulfide ore concentrate charge is heated in the presence of air to eliminate a portion of the moisture from the charge, pro-

vided less than 5 percent of the sulfur contained in the charge is eliminated in the facility.

- (c) "Roaster" means any facility in which a copper sulfide ore concentrate charge is heated in the presence of air to eliminate a significant portion (5 percent or more) of the sulfur contained in the charge.
- (d) "Calcine" means the solid materials produced by a roaster.
- (e) "Smelting" means processing techniques for the melting of a copper sulfide ore concentrate or calcine charge leading to the formation of separate layers of molten slag, molten copper, and/or copper matte.
- (f) "Smelting furnace" means any vessel in which the smelting of copper sulfide ore concentrates or calcines is performed and in which the heat necessary for smelting is provided by an electric current, rapid oxidation of a portion of the sulfur contained in the concentrate as it passes through an oxidizing atmosphere, or the combustion of a fossil fuel.
- (g) "Copper converter" means any vessel to which copper matte is charged and oxidized to copper.
- (h) "Sulfuric acid plant" means any facility producing sulfuric acid by the contact process.
- (i) "Fossil fuel" means natural gas, petroleum, coal, and any form of solid, liquid, or gaseous fuel derived from such materials, for the purpose of creating useful heat.
- (j) "Reverberatory smelting furnace" means any vessel in which the smelting of copper sulfide ore concentrations or calcines is performed and in which the heat necessary for smelting is provided primarily by combustion of a fossil fuel.
- (k) "Total smelter charge" means the weight (dry basis) of all copper sulfide ore concentrates processed at a primary copper smelter, plus the weight of all other solid materials introduced into the roasters and smelting furnaces at a primary copper smelter, except calcine, over a one-month period.
- (l) "High level of volatile impurities" means a total smelter charge containing more than 0.2 weight percent arsenic, 0.1 weight percent antimony, 4.5 weight percent lead or 5.5 weight percent zinc, or a dry basis.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test re-

quired to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any dryer any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(4) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any roaster, smelting furnace, or copper converter any gases which contain sulfur dioxide in excess of 0.065 percent by volume, except as provided in subdivisions (b) and (c) of this division.
- (b) Reverberatory smelting furnaces shall be exempted from subdivision (a) of this division during periods when the total smelter charge at the primary copper smelter contains a high level of volatile impurities.
- (c) A change in the fuel combusted in a reverberatory smelting furnace shall not be considered a modification under this subsection.

(5) Standard for Visible Emissions

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any dryer any visible emissions which exhibit greater than 20 percent opacity.
- (b) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 12.413(4), and visible emissions which exhibit greater than 20 percent opacity.

(6) Monitoring of Operations

- (a) The owner or operator of any primary copper smelter subject to 12.413(4) (b) shall keep a monthly record of the total smelter charge and the weight percent (dry basis) of arsenic, antimony, lead and zinc contained in this charge. The analytical methods and procedures employed to determine the weight of the total smelter charge and the weight percent of arsenic, antimony, lead and zinc shall be approved by the Department and shall be accurate to within plus or minus ten percent.

- (b) The owner or operator of any primary copper smelter subject to the provisions of this subsection shall install and operate:
- (i) A continuous monitoring system to monitor and record the opacity of gases discharged into the atmosphere from any dryer. The span of this system shall be set at 80 or 100 percent opacity.
 - (ii) A continuous monitoring system to monitor and record sulfur dioxide emissions discharged into the atmosphere from any roaster, smelting furnace or copper converter subject to 12.413(4) (a). The span of this system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.
- ((a)) The continuous monitoring system performance evaluation required under 12.111 shall be completed prior to the initial performance test required under 12.107. During the performance evaluation, the span of the continuous monitoring system may be set at a sulfur dioxide concentration of 0.15 percent by volume if necessary to maintain the system output between 20 percent and 90 percent of full scale. Upon completion of the continuous monitoring system performance evaluation, the span of the continuous monitoring system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.
- ((b)) For the purpose of the continuous monitoring system performance evaluation required under 12.111(3) the reference method referred to under the Field Test for Accuracy (Relative) in Performance Specification 2 of Appendix B to this regulation shall be Reference Method 6. For the performance evaluation, each concentration measurement shall be of one hour duration. The pollutant gas used to prepare the calibration gas mixtures required under paragraph 2.1, Performance Specification 2 of Appendix B, and for calibration checks under 12.111(4), shall be sulfur dioxide.
- (c) Six-hour average sulfur dioxide concentrations shall be calculated and recorded daily for the four consecutive 6-hour periods of each operating day. Each six-hour average shall be determined as the arithmetic mean of the appropriate six contiguous one-hour average sulfur dioxide concentrations provided by the continuous monitoring system installed under subdivision (b) of this section.
- (d) For the purpose of reports required under 12.106(3) periods of excess emissions that shall be reported are defined as

follows:

- (i) Opacity. Any six-minute period during which the average opacity, as measured by the continuous monitoring system installed under subdivision (b) of this division, exceeds the standard under 12.413(5) (a).
- (ii) Sulfur dioxide. All six-hour periods during which the average emissions of sulfur dioxide, as measured by the continuous monitoring system installed under 12.413(4) exceed the level of the standard. The Department will not consider emissions in excess of the level of the standard for less than or equal to 1.5 percent of the six-hour periods during the quarter as indicative of a potential violation of 12.109(4) provided the affected facility, including air pollution control equipment, is maintained as operated in a manner consistent with good air pollution control practice for minimizing emissions during these periods. Emissions in excess of the level of the standard during periods of startup, shutdown, and malfunction are not to be included within the 1.5 percent.

(7) Test Methods and Procedures

- (a) The reference methods in Appendix A to this regulation, except as provided for in 12.107(b), shall be used to determine compliance with the standards prescribed in 12.413(3), (4) and (5) as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content.
 - (ii) Sulfur dioxide concentrations shall be determined using the continuous monitoring system installed in accordance with 12.413(6) (b). One 6-hour average period shall constitute one run. The monitoring system drift during any run shall not exceed 2 percent of span.
- (b) For Method 5, Method 1 shall be used for selecting the sampling site and the number of traverse points, Method 2 for determining velocity and volumetric flow rate and Method 3 for determining the gas analysis. The sampling time for the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes, when necessitated by process variables or other factors, may be approved by the Department.

12.414 Standards of Performance for Primary Zinc Smelters

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in primary zinc smelters: roaster and

sintering machine.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Primary zinc smelter" means any installation engaged in the production, or any intermediate process in the production, of zinc or zinc oxide from zinc sulfide or concentrates through the use of pyrometallurgical techniques.
- (b) "Roaster" means any facility in which a zinc sulfide ore concentrate charge is heated in the presence of air to eliminate a significant portion (more than 10 percent) of of the sulfur contained in the charge.
- (c) "Sintering machine" means any furnace in which calcines are heated in the presence of air to agglomerate the calcines into a hard porous mass called "sinter".
- (d) "Sulfuric acid plant" means any facility producing sulfuric acid by the contact process.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any sintering machine any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(4) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by 12.407 is complete, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any roaster any gases which contain sulfur dioxide in excess of 0.065 percent by volume.
- (b) Any sintering machine which eliminates more than 10 percent of the sulfur initially contained in the zinc sulfide ore concentrates will be considered as a roaster under subdivision (a) of this division.

(5) Standard for Visible Emissions

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any sinter-

ing machine any visible emissions which exhibit greater than 20 percent opacity.

- (b) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 12.414(4) any visible emissions which exhibit greater than 20 percent opacity.

(6) Monitoring of Operations

- (a) The owner or operator of any primary zinc smelter subject to the provisions of this subsection shall install and operate:
 - (i) A continuous monitoring system to monitor and record the opacity of gases discharged into the atmosphere from any sintering machine. The span of this system shall be set at 80 to 100 percent opacity.
 - (ii) A continuous monitoring system to monitor and record sulfur dioxide emissions discharged into the atmosphere from any roaster subject to 12.414(4). The span of this system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.
 - ((a)) The continuous monitoring system performance evaluation required under 12.111(3) shall be completed prior to the initial performance evaluation, the span of the continuous monitoring system may be set at a sulfur dioxide concentration of 0.15 percent by volume if necessary to maintain the system output between 20 percent and 90 percent of full scale. Upon completion of the continuous monitoring system performance evaluation, the span of the continuous monitoring system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.
 - ((b)) For the purpose of the continuous monitoring system performance evaluation required under 12.111(3), the reference method referred to under the Field Test for Accuracy (Relative) and Performance Specification 2 of Appendix B to this regulation shall be Reference Method 6. For the performance evaluation, each concentration measurement shall be of one hour duration. The pollutant gas used to prepare the calibration gas mixtures required under paragraph 2.1, Performance Specification 2 of Appendix B, and for calibration checks under 12.111(4), shall be sulfur dioxide.

- (b) Two-hour average sulfur dioxide concentrations shall be calculated and recorded daily for the twelve consecutive 2-hour periods of each operating day. Each two-hour average shall be determined as the arithmetic mean of the appropriate two contiguous one-hour average sulfur dioxide concentrations provided by the continuous monitoring system installed under subdivision (a) of this division.
- (c) For the purpose of reports required under 12.106 (3), periods of excess emissions that shall be reported are defined as follows:
 - (i) Opacity. Any six-minute period during which the average opacity, as measured by the continuous monitoring system installed under subdivision (a) of this division, exceeds the standard under 12.414 (5) (a).
 - (ii) Sulfur dioxide. Any two-hour period, as described in subdivision (b) of this division, during which the average emissions of sulfur dioxide, as measured by the continuous monitoring system installed under subdivision (a) of this division, exceeds the standard under 12.414 (4).

(7) Test Methods and Procedures

- (a) The reference methods in Appendix A of this regulation except as provided for in 12.107 (2), shall be used to determine compliance with the standards prescribed in 12.414 (3), (4) and (5) as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content.
 - (ii) Sulfur dioxide concentrations shall be determined using the continuous monitoring system installed in accordance with 12.414 (6) (a). One 2-hour average period shall constitute one run.
- (b) For Method 5, Method 1 shall be used for selecting the sampling site and the number of traverse points, Method 2 for determining velocity and volumetric flow rate and Method 3 for determining the gas analysis. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes, when necessitated by process variables or other factors, may be approved by the Department.

12.415 Standards of Performance for Primary Lead Smelters

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in primary lead smelters: sintering machine, sintering machine discharge end, blast furnace, dross reverberatory furnace, electric smelting furnace, and converter.

(2) Definitions

As used in this subsection, all terms not defined herein shall the meaning given them in the Act and in subsection 12.107 of this regulation.

- (a) "Primary lead smelter" means any installation or any intermediate process engaged in the production of lead from lead sulfide ore concentrates through the use of pyrometallurgical techniques.
- (b) "Sintering machine" means any furnace in which a lead sulfide ore concentrate charge is heated in the presence of air to eliminate sulfur contained in the charge and to agglomerate the charge into a hard porous mass called "sinter".
- (c) "Sinter bed" means the lead sulfide ore concentrate charge within a sintering machine.
- (d) "Sintering machine discharge end" means any apparatus which receives sinter as it is discharged from the conveying grate of a sintering machine.
- (e) "Blast furnace" means any reduction furnace to which sinter is charged and which forms separate layers of molten slag and lead bullion.
- (f) "Dross reverberatory furnace" means any furnace for the removal or refining of impurities from lead bullion.
- (g) "Electric smelting furnace" means any furnace in which the heat necessary for smelting of the lead sulfide ore concentrate charge is generated by passing an electric current through a portion of the molten mass in the furnace.
- (h) "Converter" means any vessel to which lead concentrate or bullion is charged and refined.
- (i) "Sulfuric acid plant" means any facility producing sulfuric acid by the contact process.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any blast furnace, dross reverberatory furnace, or sintering machine

discharge end any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf).

(4) Standard for Sulfur Dioxide

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any sintering machine, electric smelting furnace, or converter gases which contain sulfur dioxide in excess of 0.065 percent by volume.

(5) Standard for Visible Emissions

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any blast furnace, or sintering machine discharge end any visible emissions which exhibit greater than 20 percent opacity.
- (b) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility that uses a sulfuric acid plant to comply with the standard set forth in 12.415(4), any visible emissions which exhibit greater than 20 percent opacity.

(6) Monitoring of Operations

- (a) The owner or operator of any primary lead smelter subject to the provisions of this subsection shall install and operate:
 - (i) A continuous monitoring system to monitor and record the opacity of gases discharged into the atmosphere from any blast furnace, gross reverberatory furnace, or sintering machine discharge end. The span of this system shall be set at 80 to 100 percent opacity.
 - (ii) A continuous monitoring system to monitor and record sulfur dioxide emissions discharged into the atmosphere from any sintering machine electric furnace or converter subject to 12.415(4). The span of this system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.
- ((a)) The continuous monitoring system performance evaluation required under 12.111(3) shall be completed prior to the initial performance test required

under 12.107. During the performance evaluation, the span of the continuous monitoring system may be set at a sulfur dioxide concentration of 0.15 percent by volume if necessary to maintain the system output between 20 percent and 90 percent of full scale. Upon completion of the continuous monitoring system performance evaluation, the span of the continuous monitoring system shall be set at a sulfur dioxide concentration of 0.20 percent by volume.

- ((b)) For the purpose of the continuous monitoring system performance evaluation required under 12.111(3), the reference method referred to under the Field Test for Accuracy (Relative) in Performance Specification 2 of Appendix B of this regulation shall be Reference Method 6. For the performance evaluation, each concentration measurement shall be one hour duration. The pollutant gases used to prepare the calibration gas mixtures required under paragraph 2.1, Performance Specification 2 of Appendix B, and for calibration checks under 12.111(4), shall be sulfur dioxide.
- (b) Two-hour average sulfur dioxide concentrations shall be calculated and recorded daily for the twelve consecutive two-hour periods of each operating day. Each two-hour average shall be determined as the arithmetic mean of the appropriate two contiguous one-hour average sulfur dioxide concentrations provided by the continuous monitoring system installed under subdivision (a) of this division.
- (c) For the purpose of reports required under 12.106(3), periods of excess emissions that shall be reported are defined as follows:
 - (i) Opacity. Any six-minute period during which the average opacity, as measured by the continuous monitoring system installed under subdivision (a) of this division, exceeds the standard under 12.415(5)(a).
 - (ii) Sulfur dioxide. Any two-hour period, as described in subdivision (b) of this division, during which the average emissions of sulfur dioxide, as measured by the continuous monitoring system installed under subdivision (a) of this division, exceeds the standard under 12.415(4).

(7) Test Methods and Procedures

- (a) The reference methods in Appendix A of this regulation, except as provided for in 12.107(2), shall be used to determine compliance with the standards prescribed in 12.415(3), (4) and (5) as follows:

- (i) Method 5 for the concentration of particulate matter and the associated moisture content.
- (ii) Sulfur dioxide concentrations shall be determined using the continuous monitoring system installed in accordance with 12.415(6) (a). One 2-hour average period shall constitute one run.
- (b) For Method 5, Method 1 shall be used for selecting the sampling site and the number of traverse points, Method 2 for determining velocity and volumetric flow rate and Method 3 for determining the gas analysis. The sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes, when necessitated by process variables or other factors, may be approved by the Department.

12.416 Standards of Performance for Primary Aluminum Reduction Plants

(1) Applicability and Designation of Affected Facility

The affected facilities in primary aluminum reduction plants to which this subsection applies are potroom groups and anode bake plants.

(2) Definitions

As used in this subsection, all terms not defined here in shall have the meaning given them in the Act and in subsection 2.102 of this regulation.

- (a) "Primary aluminum reduction plant" means any facility manufacturing aluminum by electrolytic reduction.
- (b) "Anode bake plant" means a facility which produces carbon anodes for use in a primary aluminum reduction plant.
- (c) "Potroom" means a building unit which houses a group of electrolytic cells in which aluminum is produced.
- (d) "Potroom group" means an uncontrolled potroom, a potroom which is controlled individually, or a group of potrooms ducted to the same control system.
- (e) "Roof monitor" means that portion of the roof of a potroom where gases not captured at the cell exit from the potroom.
- (f) "Aluminum equivalent" means an amount of aluminum which can be produced from a ton of anodes produced by an anode bake plant as determined by 12.416 (6) (e).

- (g) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in 12.416(6) or by equivalent or alternative methods [see 12.107(2)].
- (h) "Primary control system" means an air pollution control system designed to remove gaseous and particulate fluorides from exhaust gases which are captured at the cell.
- (i) "Secondary control system" means an air pollution control system designed to remove gaseous and particulate fluorides from gases which escape capture by the primary control system.

(3) Standard for Fluorides

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain total fluorides in excess of:
 - (i) 1 kg/metric ton (2 lb/ton) of aluminum produced for vertical stud Soderberg and horizontal stud Soderberg plants;
 - (ii) 0.95 kg/metric ton (1.9 lb/ton) of aluminum produced for potroom groups at prebake plants; and
 - (iii) 0.05 kg/metric ton (0.1 lb/ton) of aluminum equivalent for anode bake plants.

(4) Standard for Visible Emissions

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere:
 - (i) From any potroom group any gases which exhibit 10 percent opacity or greater, or
 - (ii) From any anode bake plant any gases which exhibit 20 percent opacity or greater.

(5) Monitoring of Operations

- (a) The owner or operator of any affected facility subject to the provisions of this subsection shall install, calibrate, maintain, and operate monitoring devices which can be used to determine daily the weight of aluminum and anode produced. The weighing devices shall have an accuracy of plus or minus 5 percent over their operating range.

- (b) The owner or operator of any affected facility shall maintain a record of daily production rates of aluminum and anodes, raw material feed rates, and cell or potline voltages.

(6) Test Methods and Procedures

- (a) Except as provided in 12.107(2), reference methods specified in Appendix A of this regulation shall be used to determine compliance with the standards prescribed in 12.416(3) as follows:
 - (i) For sampling emissions from stacks:
 - ((a)) Method 12A or 13B for the concentration of total fluorides and the associated moisture content,
 - ((b)) Method 1 for sample and velocity traverses.
 - ((c)) Method 2 for velocity and volumetric flow rate, and
 - ((d)) Method 3 for gas analysis.
 - (ii) For sampling emissions from roof monitors not employing stacks or pollutant collection systems:
 - ((a)) Method 12 for the concentration of total fluorides and associated moisture content,
 - ((b)) Method 1 for sample and velocity traverses,
 - ((c)) Method 2 and Method 14 for velocity and volumetric flow rate, and
 - ((d)) Method 3 for gas analysis.
 - (iii) For sampling emissions from roof monitors not employing stacks but equipped with pollutant collection systems, the procedures under 12.107(2) shall be followed.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least eight hours for any potroom sample and at least four hours for any anode bake plant sample, and the minimum sample volume shall be 6.8 dscm (240 dscf) for any potroom sample and 3.4 dscm (120 dscf) for any anode bake plant sample except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) The air pollution control system for each affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined

using applicable methods specified under subdivision (a) of this division.

(d) The rate of aluminum production shall be determined as follows:

(i) Determine the weight of aluminum in metric tons produced during a period from the last tap before a run starts until the first tap after the run ends using a monitoring device which meets the requirements of 12.416(5) (a) .

(ii) Divide the weight of aluminum produced by the length of the period in hours.

(e) For anode bake plants, the aluminum equivalent for anodes produced shall be determined as follows:

(i) Determine the average weight (metric tons) of anode produced in the anode bake plant during a representative oven cycle using a monitoring device which meets the requirements of 12.416 (5) (a) .

(ii) Determine the average rate of anode production by dividing the total weight of anodes produced during the representative oven cycle by the length of the cycle in hours.

(iii) Calculate the aluminum equivalent for anodes produced by multiplying the average rate of anode production by two. (Note: an owner or operator may establish a different multiplication factor by submitting production records of the tons of aluminum produced and the concurrent tons of anode consumed by potrooms) .

(f) For each run, potroom group emissions expressed in kg/metric ton of aluminum produced shall be determined using the following equation:

$$E_{pg} = \frac{(CsQs)_1 \times 10^{**}-6 + (CsQs)_2 \times 10^{**}-6}{M}$$

where:

E_{pg} = potroom group emissions of total fluorides in kg/metric ton of aluminum produced.

Cs = concentration of total fluorides in mg/dscm as determined by Method 13A or 13B or by Method 14, as applicable.

Qs = volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2 and/or Method 14, as

applicable.

10**-6 = conversion factor from mg to kg.

M = rate of aluminum production in metric ton/hr as determined by 12.416 (6) (d) .

(CsQs) 2 = product of Cs and Qs, for measurements of primary control system effluent gas streams.

(CsQs) 1 = product of Cs and Qs for measurements of secondary control system or roof monitor effluent gas streams.

(g) For each run, as applicable, anode bake plant emissions expressed in kg/metric ton of aluminum equivalent shall be determined using the following equation:

$$E_{bp} = \frac{CsQs \times 10^{-6}}{M_e}$$

where:

E_{bp} = anode bake plant emissions of total fluorides in kg/metric ton of aluminum equivalent.

Cs = concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.

Qs = volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.

10**-6 = conversion factor from mg to kg.

M_e = aluminum equivalent for anodes produced by anode bake plants in metric ton/hr as determined by 12.416 (6) (e) .

12.417 Standards of Performance for the Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provision of this subsection apply is each wet-process phosphoric acid plant. For the purpose of this subsection, the affected facility includes any combination of: reactors, filters, evaporators, and hotwells.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Wet-process phosphoric acid plant" means any facility manufacturing phosphoric acid by reacting phosphate rock and acid.
- (b) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in subsection 12.417(5), or equivalent or alternative methods.
- (c) "Equivalent P_2O_5 feed" means the quantity of phosphorus, expressed as phosphorus pentoxide, fed to the process.

(3) Standard for Fluoride

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility and gases which contain total fluorides in excess of 10.0 g/metric ton of equivalent P_2O_5 feed (0.020 lb/ton).

(4) Monitoring of Operations

- (a) The owner or operator of any wet-process phosphoric acid plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The monitoring device shall have an accuracy of ± 5 percent over its operating range.
- (b) The owner or operator of any wet-process phosphoric acid plant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hr of phosphorus-bearing feed using a monitoring device for measuring mass flow rate which meets the requirements of subdivision (a) of this division and then by proceeding according to subsection 12.417(5)(d)(ii).
- (c) The owner or operator of any wet-process phosphoric acid subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across

the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in subsection 12.417(3) as follows:
 - (i) Method 13A or 13B for the concentration of total fluorides and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) The air pollution control system for the affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined by applicable test methods and procedures.
- (d) Equivalent P_2O_5 feed shall be determined as follows:
 - (i) Determine the total mass rate in metric ton/hr of phosphorus-bearing feed during each run using a flow monitoring device meeting the requirements of subsection 12.417(4)(a).
 - (ii) Calculate the equivalent P_2O_5 feed by multiplying the percentage P_2O_5 content, as measured by the spectrophotometric molybdovanadophosphate method (AOAC Method 9), times the total mass rate of phosphorus-bearing feed. AOAC Method 9 is published in the Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp. 11-12. Other methods may be approved by the Department.

- (e) For each run, emissions expressed in g/metric ton of equivalent P_2O_5 feed shall be determined using the following equation:

$$E = \frac{(C_2 Q_3) 10^{-3}}{M_{P_2O_5}}$$

where:

- E = Emissions of total fluorides in g/metric ton of equivalent P_2O_5 feed.
- C_2 = Concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.
- Q_3 = Volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.
- 10^{-3} = Conversion factor for mg to g.
- $M_{P_2O_5}$ = Equivalent P_2O_5 feed in metric ton/hr as determined by subsection 12.417(5)(d).

12.418 Standards of Performance for the Phosphate Fertilizer Industry: Super-phosphoric Acid Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each superphosphoric acid plant. For the purpose of this subsection, the affected facility includes any combination of: evaporators, hotwells, acid pumps, and cooling tanks.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Superphosphoric acid plant" means any facility which concentrates wet-process phosphoric acid to 66 percent or greater P_2O_5 content by weight for eventual consumption as a fertilizer.
- (b) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in subsection 12.418(5), or equivalent or alternative methods.
- (c) "Equivalent P_2O_5 feed" means the quantity of phosphorus, expressed as phosphorous pentoxide, fed to the process.

(3) Standard for Fluorides

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain total fluorides in excess of 5.0 g/metric ton of equivalent P_2O_5 feed (0.010 lb/ton).

(4) Monitoring of Operations

- (a) The owner or operator of any superphosphoric acid plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a flow monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The flow monitoring device shall have an accuracy of ± 5 percent over its operating range.
- (b) The owner or operator of any superphosphoric acid plant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hr of phosphorus-bearing feed using a flow monitoring device meeting the requirements of subdivision (a) of this division and then by proceeding according to subsection 12.418(5)(d)(ii).
- (c) The owner or operator of any superphosphoric acid plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in subsection 12.418(3) as follows:
 - (i) Method 13A or 13B for the concentration of total fluorides and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,

- (iii) Method 2 for velocity and volumetric flow rate, and
- (iv) Method 3 for gas analysis.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be at least 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors may be approved by the Department.
- (c) The air pollution control system for the affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined by applicable test methods and procedures.
- (d) Equivalent P₂O₅ feed shall be determined as follows:
 - (i) Determine the total mass rate in metric ton/hr of phosphorus-bearing feed during each run using a flow monitoring device meeting the requirements of subsection 12.418(4)(a).
 - (ii) Calculate the equivalent P₂O₅ feed by multiplying the percentage P₂O₅ content, as measured by the spectrophotometric molybdovanadophosphate method (AOAC Method 9), times the total mass rate of phosphorus-bearing feed. (AOAC Method 9) is published in the Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp. 11-12. Other methods may be approved by the Department.
- (e) For each run, emissions expressed in g/metric ton of equivalent P₂O₅ feed, shall be determined using the following equation:

$$E = \frac{(C_2 Q_3) 10^{-3}}{M_{P_{2O_5}}}$$

where:

- E = Emissions of total fluorides in g/metric ton of equivalent P₂O₅ feed.
- C₃ = Concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.
- Q₃ = Volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.

10^{-3} = Conversion factor for mg to g.

$M_{P_2O_5}$ = Equivalent P_2O_5 feed in metric ton/hr as determined by subsection 12.418.

12.419 Standards of Performance for the Phosphate Fertilizer Industry: Diammonium Phosphate Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each granular diammonium phosphate plant. For the purpose of this subsection, the affected facility includes any combination of: reactors, granulators, dryers, coolers, screens and mills.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Granular diammonium phosphate plant" means any plant manufacturing granular diammonium phosphate by reacting phosphoric acid with ammonia.
- (b) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in subsection 12.419(5) or equivalent or alternative methods.
- (c) "Equivalent P_2O_5 feed" means the quantity of phosphorus, expressed as phosphorous pentoxide, fed to the process.

(3) Standard for Fluorides

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain total fluorides in excess of 30 g/metric ton of equivalent P_2O_5 feed (0.060 lb/ton).

(4) Monitoring of Operations

- (a) The owner or operator of any granular diammonium phosphate plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a flow monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The flow monitoring device shall have an accuracy of ± 5 percent over its operating range.
- (b) The owner or operator of any granular diammonium phosphate plant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hr of phosphorus-bearing feed using a flow monitoring device meeting the requirements of subdivision (a) of this division and then by proceeding according to subsection 12.419(5)(d)(ii).
- (c) The owner or operator of any granular diammonium phosphate plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in subsection 12.419(3) as follows:
 - (i) Method 13A or 13B for the concentration of total fluorides and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be at least 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes when necessitated by process variables or other factors, may be approved by the Department.

- (c) The air pollution control system for the affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined by applicable test methods and procedures.
- (d) Equivalent P_2O_5 feed shall be determined as follows:
- (i) Determine the total mass rate in metric ton/hr of phosphorus-bearing feed during each run using a flow monitoring device meeting the requirements of subsection 12.419(4)(a).
 - (ii) Calculate the equivalent P_2O_5 feed by multiplying the percentage P_2O_5 content, as measured by the spectrophotometric molybdovanadophosphate method (AOAC Method 9, times the total mass rate of phosphorus-bearing feed. AOAC Method 9 is published in the Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp. 11-12. Other methods may be approved by the Department.
- (e) For each run, emissions expressed in g/metric ton of equivalent P_2O_5 feed shall be determined using the following equation:

$$E = \frac{(C_2 Q_3) 10^{-3}}{M_{P_2O_5}}$$

where:

E = Emissions of total fluorides in g/metric ton of equivalent P_2O_5 .

C_2 = Concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.

Q_3 = Volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.

10^{-3} = Conversion factor for mg to g.

$M_{P_2O_5}$ = Equivalent P_2O_5 feed in metric ton/hr as determined by subsection 12.419(5)(d).

12.420 Standards of Performance for the Phosphate Fertilizer Industry: Triple Superphosphate Plants

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each triple superphosphate plant. For the purpose of this subsection, the affected facility includes any combination of: mixers, curing belts (dens), reactors, granulators, dryers, cookers, screens, mills, and facilities which store run-of-pile triple superphosphate.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Triple superphosphate plant" means any facility manufacturing triple superphosphate by reacting phosphate rock with phosphoric acid. A run-of-pile triple superphosphate plant includes curing and storing.
- (b) "Run-of-pile triple superphosphate" means any triple superphosphate that has not been processed in a granulator and is composed of particles at least 25 percent by weight of which (when not caked) will pass through a 16 mesh screen.
- (c) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in subsection 12.420(5), or equivalent or alternative methods.
- (d) "Equivalent P_2O_5 feed" means the quantity of phosphorus, expressed as phosphorus pentoxide, fed to the process.

(3) Standard for Fluorides

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain total fluorides in excess of 100 g/metric ton of equivalent P_2O_5 feed (0.20 lb/ton).

(4) Monitoring of Operations

- (a) The owner or operator of any triple superphosphate plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a flow monitoring device which can be used to determine the mass flow of phosphorus-bearing feed material to the process. The flow monitoring device shall have an accuracy of ± 5 percent over its operating range.
- (b) The owner or operator of any triple superphosphate plant shall maintain a daily record of equivalent P_2O_5 feed by first determining the total mass rate in metric ton/hr of phosphorus-bearing feed using a flow monitoring device meeting the requirements of subdivision (a) of this division and then by proceeding according to subsection 12.420(5)(d)(ii).
- (c) The owner or operator of any triple superphosphate plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in subsection 12.420(3) as follows:
 - (i) Method 13A or 13B for the concentration of total fluorides and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be at least 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Department.

- (c) The air pollution control system for the affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined by applicable test methods and procedures.
- (d) Equivalent P_2O_5 feed shall be determined as follows:
 - (i) Determine the total mass rate in metric ton/hr of phosphorus-bearing feed during each run using a flow monitoring device meeting the requirements of subsection 12.420(4)(a).
 - (ii) Calculate the equivalent P_2O_5 feed by multiplying the percentage P_2O_5 content, as measured by the spectrophotometric molybdovanadophosphate method (AOAC Method 9), times the total mass rate of phosphorus-bearing feed. AOAC Method 9 is published in the Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp.11-12. Other methods may be approved by the Department.
- (e) For each run, emissions expressed in g/metric ton of equivalent P_2O_5 feed shall be determined using the following equation:

$$E = \frac{(C_2 Q_3) 10^{-3}}{M_{P_2O_5}}$$

where:

- E = Emissions of total fluorides in g/metric ton of equivalent P_2O_5 feed.
- C_2 = Concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.
- Q_3 = Volumetric flow rate of the effluent gas stream in dscm/hr as determined by Method 2.
- 10^{-3} = Conversion factor for mg to g.
- $M_{P_2O_5}$ = Equivalent P_2O_5 feed in metric ton/hr as determined by subsection 12.420(5)(d).

12.421 Standards of Performance for the Phosphate Fertilizer
Industry: Granular Triple Superphosphate Storage Facilities

(1) Applicability and Designation of Affected Facility

The affected facility to which the provisions of this subsection apply is each granular triple superphosphate storage facility. For the purpose of this subsection, the affected facility includes any combination of: storage or curing piles, conveyors, elevators, screens and mills.

(2) As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Granular triple superphosphate storage facility" means any facility curing or storing granular triple superphosphate.
- (b) "Total fluorides" means elemental fluorine and all fluoride compounds as measured by reference methods specified in subsection 12.421(5), or equivalent or alternative methods.
- (c) "Equivalent P_2O_5 stored" means the quantity of phosphorus, expressed as phosphorus pentoxide, being cured or stored in the affected facility.
- (d) "Fresh granular triple superphosphate" means granular triple superphosphate produced no more than 10 days prior to the date of the performance test.

(3) Standard for Fluorides

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any affected facility any gases which contain total fluorides in excess of 0.25 g/hr/metric ton of equivalent P_2O_5 stored (5.0×10^{-4} lb/hr/ton of equivalent P_2O_5 stored).

(4) Monitoring of Operations

- (a) The owner or operator of any granular triple superphosphate storage facility subject to the provisions of this subsection shall maintain an accurate account of triple superphosphate in storage to permit the determination of the amount of equivalent P_2O_5 stored.

- (b) The owner or operator of any granular triple superphosphate storage facility shall maintain a daily record of total equivalent P_2O_5 stored by multiplying the percentage P_2O_5 content, as determined by subsection 12.421(5)(f)(ii), times the total mass of granular triple superphosphate stored.
- (c) The owner or operator of any granular triple superphosphate storage facility subject to the provisions of this subsection shall install, calibrate, maintain, and operate a monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device which continuously measures and permanently records the total pressure drop across the process scrubbing system. The monitoring device shall have an accuracy of ± 5 percent over its operating range.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided for in subsection 12.107(2), shall be used to determine compliance with the standard prescribed in subsection 12.421(3) as follows:
 - (i) Method 13A or 13B for the concentration of total fluorides and the associated moisture content,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate, and
 - (iv) Method 3 for gas analysis.
- (b) For Method 13A or 13B, the sampling time for each run shall be at least 60 minutes and the minimum sample volume shall be at least 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) The air pollution control system for the affected facility shall be constructed so that volumetric flow rates and total fluoride emissions can be accurately determined by applicable test methods and procedures.

- (d) Except as provided under subdivision (e) of this division, all performance tests on granular triple superphosphate storage facilities shall be conducted only when the following quantities of product are being cured or stored in the facility.
 - (i) Total granular triple superphosphate - at least 10 percent of the building capacity.
 - (ii) Fresh granular triple superphosphate - at least 20 percent of the amount of triple superphosphate in the building.
- (e) If the provisions set forth in subdivision (d)(2) of this division exceed production capabilities for fresh granular triple superphosphate, the owner or operator shall have at least five days maximum production of fresh granular triple superphosphate in the building during a performance test.
- (f) Equivalent P_2O_5 stored shall be determined as follows:
 - (i) Determine the total mass stored during each run using an accountability system meeting the requirements of subsection 12.421(4)(a).
 - (ii) Calculate the equivalent P_2O_5 stored by multiplying the percentage P O content, as measured by the spectrophotometric molybdovanadophosphate method (AOAC Method 9), times the total mass stored. AOAC Method 9 is published in the Official Methods of Analysis of the Association of Official Analytical Chemists, 11th edition, 1970, pp. 11-12. Other methods may be approved by the Department.
- (g) For each run, emissions expressed in g/hr/metric ton of equivalent P_2O_5 stored shall be determined using the following equation:

$$E = \frac{(C_2 Q_3) 10^{-3}}{M_{P_2O_5}}$$

where:

- E = Emissions of total fluorides in g/hr/metric of equivalent P_2O_5 stored.
- C_2 = Concentration of total fluorides in mg/dscm as determined by Method 13A or 13B.

Q3 = Volumetric flow rate of the effluent gas stream
in dscm/hr as determined by Method 2

10**-3 = Conversion factor for mg to g.

Mp205 = Equivalent P205 feed in metric tons as measured by
subsection 12.421(5) (d).

12.422 Standards of Performance for Coal Preparation Plants

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to any of the following affected facilities in coal preparation plants which process more than 200 tons per day: thermal dryers, pneumatic coal-cleaning equipment (air tables), coal processing and conveying equipment (including breakers and crushers), coal storage systems, and coal transfer and loading systems.

(2) Definitions

As used in this subsection, all terms not defined herein have the meaning given them in the Act and in subsection 2.102 of the regulation.

- (a) "Coal preparation plant" means any facility (excluding underground mining operations) which prepares coal by one or more of the following processes: breaking, crushing, screening, wet or dry cleaning, and thermal drying.
- (b) "Bituminous coal" means solid fossil fuel classified as bituminous coal by A.S.T.M. Designation D-388-66.
- (c) "Coal" means all solid fossil fuels classified as anthracite, bituminous, subbituminous, or lignite by A.S.T.M. Designation D-388-66.
- (d) "Cyclonic flow" means a spiraling movement of exhaust gases within a duct or stack.
- (e) "Thermal dryer" means any facility in which the moisture content of bituminous coal is reduced by contact with a heated gas stream which is exhausted to the atmosphere.
- (f) "Pneumatic coal-cleaning equipment" means any facility which classifies bituminous coal by size or separates bituminous coal by size or separates bituminous coal from refuse by application of air stream(s).
- (g) "Coal processing and conveying equipment" means any machinery used to reduce the size of coal or to separate coal from refuse, and the equipment used to convey coal to or remove coal and refuse from the machinery. This includes, but is not limited to, breakers, crushers, screens, and

conveyor belts.

- (h) "Coal storage system" means any facility used to store coal except for open storage piles.
- (i) "Transfer and loading system" means any facility used to transfer and load coal for shipment.

(3) Standards for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, an owner or operator subject to the provisions of this subsection shall not cause to be discharged into the atmosphere from any thermal dryer gases which:
 - (i) Contain particulate matter in excess of 0.070 g/dscm (0.031 gr/dscf).
 - (ii) Exhibit 20 percent opacity or greater.
- (b) On and after the date on which the performance test required to be conducted by 12.107 is completed, an owner or operator subject to the provisions of this subsection shall not cause to be discharged into the atmosphere from any pneumatic coal cleaning equipment, gases which:
 - (i) Contain particulate matter in excess of 0.040 g/dscm (0.018 gr/dscf).
 - (ii) Exhibit 10 percent opacity or greater.
- (c) On and after the date on which the performance test required to be conducted by 12.107 is completed, an owner or operator subject to the provisions of this subsection shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit 20 percent opacity or greater.

(4) Monitoring of Operations

- (a) The owner or operator of any thermal dryer shall install, calibrate, maintain, and continuously operate monitoring devices as follows:
 - (i) A monitoring device for the measurement of the temperature of the gas stream at the exit of the thermal dryer on a continuous basis. The monitoring device is to be certified by the manufacturer to be accurate within plus or minus 3 degrees Fahrenheit.
 - (ii) For affected facilities that use venturi scrubber emission control equipment:

((a)) A monitoring device for the continuous measurement of the pressure loss through the venturi constriction of the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within plus or minus 1 inch water gage.

((b)) A monitoring device for the continuous measurement of the water supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within plus or minus 5 percent of design water supply pressure. The pressure sensor or tap must be located close to the water discharge point. The Department may be consulted for approval of alternative locations.

(b) All monitoring devices under subdivision (a) of this division are to be recalibrated annually in accordance with procedures under 12.111(2) (c) of this regulation.

(5) Test Methods and Procedures

(a) The reference methods in Appendix A of this regulation, except as provided in 12.107(2), are used to determine compliance with the standards prescribed in 12.422(3) as follows:

(i) Method 5 for the concentration of particulate matter and associated moisture content,

(ii) Method 1 for sample and velocity traverses,

(iii) Method 2 for velocity and volumetric flow rate, and

(iv) Method 3 for gas analysis.

(b) For Method 5, the sampling time for each run is at least 60 minutes and the minimum sample volume is 0.85 dscm (30 dscf) except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Department. Sampling is not to be started until 30 minutes after start-up and is to be terminated before shutdown procedures commence. The owner or operator of the affected facility shall eliminate cyclonic flow during performance tests in a manner acceptable to the Department.

(c) The owner or operator shall construct the facility so that particulate emissions from thermal dryers or pneumatic coal cleaning equipment can be accurately determined by applicable test methods and procedures under subdivision (a) of this division.

12.423 Standards of Performance for Ferroalloy Production

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities: Electric submerged arc furnaces which produce silicon metal, ferrosilicon, calcium silicon, silicomanganese, zirconium, ferrochrome silicon, silvery iron, high-carbon ferrochrome, charge chrome standard ferromanganese, silimanganese, ferromanganese silicon, or calcium carbide; and dust-handling equipment.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Electric submerged arc furnace" means any furnace wherein electrical energy is converted to heat energy by transmission of current between electrodes partially submerged in the furnace charge.
- (b) "Furnace charge" means any material introduced into the electric submerged arc furnace and may consist of, but is not limited to, ores, slag, carbonaceous material, and limestone.
- (c) "Product change" means any change in the composition of the furnace charge that would cause the electric submerged arc furnace to become subject to a different mass standard applicable under this subsection.
- (d) "Slag" means the more or less completely fused and vitrified matter separated during the reduction of a metal from its ore.
- (e) "Tapping" means the removal of slag or product from the electric submerged arc furnace under normal operating conditions such as removal of metal under normal pressure and movement by gravity down the spout into the ladle.
- (f) "Tapping period" means the time duration from initiation of the process of opening the tap hole until plugging of the tap hole is complete.
- (g) "Furnace cycle" means the time period from completion of a furnace product tap to the completion of the next consecutive product tap.
- (h) "Tapping station" means that general area where molten product or slag is removed from the electric submerged arc furnace.
- (i) "Blowing tap" means any tap in which an evaluation of gas

forces or projects jets of flame or metal sparks beyond the ladle, runner, or collection hood.

- (j) "Furnace power input" means the resistive electrical power consumption of an electric submerged arc furnace as measured in kilowatts.
- (k) "Dust-handling equipment" means any equipment used to handle particulate matter collected by the air pollution control device (and located at or near such device) serving any electric submerged arc furnace subject to this subsection.
- (l) "Control device" means the air pollution control equipment used to remove particulate matter generated by an electric submerged arc furnace from an effluent gas stream.
- (m) "Capture system" means the equipment (including hoods, ducts, fans, dampers, etc.) used to capture or transport particulate matter generated by an affected electric submerged arc furnace to the control device.
- (n) "Standard ferromanganese" means that alloy as defined by A.S.T.M. designation A99-66.
- (o) "Silicomanganese" means that alloy as defined by A.S.T.M. designation A483-66.
- (p) "Calcium carbide" means material containing 70 to 85 percent calcium carbide by weight.
- (q) "High-carbon ferrochrome" means that alloy as defined by A.S.T.M. designation A101-66 grades HC1 through HC6.
- (r) "Charge chrome" means that alloy containing 52 to 70 percent by weight chromium, 5 to 8 percent by weight carbon, and 3 to 6 percent by weight silicon.
- (s) "Silvery iron" means any ferrosilicon, as defined by A.S.T.M. designation 100-69, which contains less than 30 percent silicon.
- (t) "Ferrochrome silicon" means that alloy as defined by A.S.T.M. designation A482-66.
- (u) "Silicomanganese zirconium" means that alloy containing 60 to 65 percent by weight silicon, 1.5 to 2.5 percent by weight calcium, 5 to 7 percent by weight zirconium, 0.75 to 1.25 percent by weight aluminum, 5 to 7 percent by weight manganese, and 2 to 3 percent by weight barium.
- (v) "Calcium silicon" means that alloy as defined by A.S.T.M. designation A495-64.

- (w) "Ferrosilicon" means that alloy as defined by A.S.T.M. designation A100-69 grades A, B, C, D, and E which contains 50 or more percent by weight silicon.
- (x) "Silicon metal" means any silicon alloy containing more than 96 percent silicon by weight.
- (y) "Ferromanganese silicon" means that alloy containing 63 to 66 percent by weight manganese, 28 to 32 percent by weight silicon, and a maximum of 0.80 percent by weight carbon.

(3) Standard for particulate Matter

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any electric submerged arc furnace any gases which:
 - (i) Exit from a control device and contain particulate matter in excess of 0.45 kg/MW-hr (0.99 lb/MW-hr) while silicon metal, ferrosilicon, calcium silicon, or silicomanganese zirconium is being produced.
 - (ii) Exit from a control device and contain particulate matter in excess of 0.23 kg/MW-hr (0.51 lb/MW-hr) while high-carbon ferrochrome, charge chrome, standard ferromanganese, silicomanganese, calcium carbide, ferrochrome silicon, ferromanganese silicon, or silvery iron is being produced.
 - (iii) Exit from a control device and exhibit 15 percent opacity or greater.
 - (iv) Exit from an electric submerged arc furnace and escape the capture system and are visible without the aid of instruments. The requirements under this paragraph apply only during periods when flow rates are being established under 12.423(6)(d).
 - (v) Escape the capture system at the tapping station and are visible without the aid of instruments for more than 40 percent of each tapping period. There are no limitations on visible emissions under this paragraph when a blowing tap occurs. The requirements under this paragraph apply only during periods when flow rates are being established under 12.423(6)(d).
- (b) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any dust-handling equipment any gases which exhibit 10 percent opacity or greater.

(4) Standard for Carbon Monoxide

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from any electric submerged arc furnace any gases which contain, on a dry basis, 20 or greater volume percent of carbon monoxide. Combustion of such gases under conditions acceptable to the Department constitutes compliance with this section. Acceptable conditions include, but are not limited to, flaring of gases or use of gases as fuel for other processes.

(5) Emission Monitoring

- (a) The owner or operator subject to the provisions of this subsection shall install, calibrate, maintain and operate a continuous monitoring system for measurement of the opacity of emissions discharged into the atmosphere from the control device(s).
- (b) For the purpose of reports required under 12.106(3), the owner or operator shall report as excess emissions all six-minute periods in which the average opacity is 15 percent or greater.
- (c) The owner or operator subject to the provisions of this subsection shall submit a written report of any product change to the Department. Reports of product changes must be postmarked not later than 30 days after implementation of the product change.

(6) Monitoring of Operations

- (a) The owner or operator of any electric submerged arc furnace subject to the provisions of this subsection shall maintain daily records of the following information:
 - (i) Product being produced.
 - (ii) Description of constituents of furnace charge, including the quantity, by weight.
 - (iii) time and duration of each tapping period and the identification of material tapped (slag or product).
 - (iv) All furnace power input data obtained under subdivision (b) of this division.
 - (v) All flow rate data obtained under subdivision (c) of this division or all fan motor power consumption and pressure drop data obtained under subdivision (e) of this division.

- (b) The owner or operator subject to the provisions of this subsection shall install, calibrate, maintain, and operate a device to measure and continuously record the furnace power input. The furnace power input may be measured at the output or input side of the transformer. The device must have an accuracy of plus or minus 5 percent over its operating range.
- (c) The owner or operator subject to the provisions of this subsection shall install, calibrate, and maintain a monitoring device that continuously measures and records the volumetric flow rate through each separately ducted hood of the capture system, except as provided under subdivision (e) of this division. The owner or operator of an electric submerged arc furnace that is equipped with a water cooled cover which is designed to contain and prevent escape of the generated gas and particulate matter shall monitor only the volumetric flow rate through the capture system for control of emissions from the tapping station. The owner or operator may install the monitoring device(s) in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device must have an accuracy of plus or minus 10 percent over its normal operating range and must be calibrated according to the manufacturer's instructions. The Department may require the owner or operator to demonstrate the accuracy of the monitoring device relative to Methods 1 and 2 of Appendix A to this regulation.
- (d) When performance tests are conducted under the provisions of 12.107 of this regulation to demonstrate compliance with the standards under 12.423(3) (a) (iv) and (v), the volumetric flow rate through each separately ducted hood of the capture system must be determined using the monitoring device required under subdivision (c) of this division. The volumetric flow rates must be determined for furnace power input levels at 50 and 100 percent of the nominal rated capacity of the electric submerged arc furnace. At all times the electric submerged arc furnace is operated, the owner or operator shall maintain the volumetric flow rate at or above the appropriate levels for that furnace power plant level determined during the most recent performance test. If emissions due to tapping are captured and ducted separately from emissions of the electric submerged arc furnace, during each tapping period the owner or operator shall maintain the exhaust flow rates through the capture system over the tapping station at or above the levels established during the most recent performance test. Operation at lower flow rates may be considered by the Department to be unacceptable operation and maintenance of the affected facility. The owner or operator may request that these flow rates be reestablished by conducting new performance test under 12.107 of this regulation.

- (e) The owner or operator may as an alternative to subdivision (c) of this division determine the volumetric flow rate through each fan of the capture system from the fan power consumption, pressure drop across the fan and the fan performance curve. Only data specific to the operation of the affected electric submerged arc furnace are acceptable for demonstration of compliance with the requirements of this subdivision. The owner or operator shall maintain on file a permanent record of the fan performance curve (prepared for a specific temperature) and shall:
- (i) Install, calibrate, maintain, and operate a device to continuously measure and record the power consumption of the fan motor (measured in kilowatts), and
 - (ii) Install, calibrate, maintain, and operate a device to continuously measure and record the pressure drop across the fan. The fan power consumption and pressure drop measurements must be synchronized to allow real time comparisons of the data. The monitoring devices must have an accuracy of plus or minus 5 percent over their normal operating ranges.
- (f) The volumetric flow rate through each fan of the capture system must be determined from the fan power consumption, fan pressure drop, and fan performance curve specified under subdivision (e) of this division, during any performance test required under 12.107 of this part to demonstrate compliance with the standards under 12.423(3) (a) (iv) and (v). The owner or operator shall determine the volumetric flow rate at a representative temperature for furnace power input levels of 50 and 100 percent of the nominal rated capacity of the electric submerged arc furnace. At all times the electric submerged arc furnace is operated, the owner or operator shall maintain the fan power consumption and fan pressure drop at levels such that the volumetric flow rate is at or above the levels established during the most recent performance test for that furnace power input level. If emissions due to tapping are captured and ducted separately from emissions of the electric submerged arc furnace, during each tapping period the owner or operator shall maintain the fan power consumption and fan pressure drop at levels such that the volumetric flow rate is at or above the levels established during the most recent performance test. Operation at lower flow rates may be considered by the Department to be unacceptable operation and maintenance of the affected facility. The owner or operator may request that these flow rates be reestablished by conducting new performance tests under 12.107 of this regulation. The Department may require the owner or operator to verify the fan performance curve by monitoring necessary fan operating parameters and determining the gas volume moved relative to Methods 1

and 2 of Appendix A to this regulation.

- (g) All monitoring devices required under subdivisions (c) and (e) of this division are to be checked for calibration annually in accordance with the procedures under 12.111(2) .

(7) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided in 12.107(2), shall be used to determine compliance with the standards prescribed in 12.423(4) as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content except that the heating systems specified in paragraphs 2.1.2 and 2.1.4 of Method 5 are not to be used when the carbon monoxide content of the gas stream exceeds 10 percent by volume, dry bases.
 - (ii) Method 1 for sample and velocity traverses.
 - (iii) Method 2 for velocity and volumetric flow rate.
 - (iv) Method 3 for gas analysis, including carbon monoxide.
- (b) For Method 5, the sampling time for each run is to include an integral number of furnace cycles. The sampling time for each run must be at least 60 minutes and the minimum sample volume must be 1.8 dscm (64 dscf) when sampling emissions from open electric submerged arc furnaces with wet scrubber control devices, sealed electric submerged arc furnaces, or semi-enclosed electric submerged arc furnaces. When sampling emissions from other types of installations, the sampling time for each run must be at least 200 minutes and the minimum sample volume must be 5.7 dscm (200 dscf). Shorter sampling times or smaller sampling volumes, when necessitated by process variables or other factors, may be approved by the Department.
- (c) During the performance test, the owner or operator shall record the maximum open hood area (in hoods with segmented or otherwise moveable sides) under which the process is expected to be operated and remain in compliance with all standards. Any future operation of the hooding system with open areas in excess of the maximum is not permitted.
- (d) The owner or operator shall construct the control device so that volumetric flow rates and particulate matter emissions can be accurately determined by applicable test methods and procedures.
- (e) During any performance test required under 12.107 of this regulation, the owner or operator shall not allow gaseous

diluents to be added to the effluent gas stream after the fabric in an open pressurized fabric filter collector unless the total gas volume flow from the collector is accurately determined and considered in the determination of emissions.

- (f) When compliance with 12.423(4) is to be attained by combusting the gas stream in a flare, the location of the sampling site for particulate matter is to be upstream of the flare.
- (g) For each run, particulate matter emissions, expressed in kg/hr (lb/hr), must be determined on each exhaust stream at which emissions are quantified using the following equation:

$$E_n = C_c Q_s$$

where:

E_n = Emissions of particulate matter in kg/hr (lb/hr).

C_s = Concentration of particulate matter in kg/dscm (lb/dscf) as determined by Method 5.

Q_s = Volumetric flow rate of the effluent gas stream in dscm/hr (dscf/hr) as determined by Method 2.

- (h) For Method 5, particulate matter emissions from the affected facility, expressed in kg/MW-hr (lb/MW-hr) must be determined for each run using the following equation:

$$E = \frac{E_1}{P} + \dots + \frac{E_n}{P}$$

where:

E = Emissions of particulate from the affected facility, in kg/MW-hr (lb/MW-hr).

N = Total number of exhaust streams at which emissions are quantified.

E_n = Emission of particulate matter from each exhaust stream in kg/hr (lb/hr), as determined in subdivision (g) of this division.

p = Average furnace power input during the sampling period, in megawatts as determined according to 12.423(6) (b).

12.424 Standard of Performance for Steel Plants: Electric Arc Furnaces

(1) Applicability and Designation of Affected Facility

The provisions of this subsection are applicable to the following affected facilities in steel plants: electric arc furnaces and dust-handling equipment.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Electric arc furnace" (EAF) means any furnace that produces molten steel and heats the charge materials with electric arcs from carbon electrodes. Furnaces from which the molten steel is cast into the shape of finished products, such as in a foundry, are not affected facilities included within the scope of this definition. Furnaces which, as the primary source of iron, continuously feed pre-reduced ore pellets are not affected facilities within the scope of this definition.
- (b) "Dust-handling equipment" means any equipment used to handle particulate matter collected by the control device and located at or near the control device for an EAF subject to this subsection.
- (c) "Control device" means the air pollution control equipment used to remove particulate matter generated by an EAF(s) from the effluent gas stream.
- (d) "Capture system" means the equipment (including ducts, hoods, fans, dampers, etc.) used to capture or transport particulate matter generated by an EAF to the air pollution control device.

- (e) "Charge" means the addition of iron and steel scrap or other materials into the top of an electric arc furnace.
- (f) "Charging period" means the time period commencing at the moment an EAF starts to open and ending either three minutes after the EAF roof is returned to its closed position or six minutes which commencement of opening of the roof, whichever is longer.
- (g) "Tap" means the pouring of molten steel from an EAF.
- (h) "Tapping period" means the time period commencing at the moment an EAF begins to tilt to pour and ending either three minutes after an EAF returns to an upright position or six minutes after commencing to tilt, whichever is longer.
- (i) "Meltdown and refining" means that phase of the steel production cycle when charge material is melted and undesirable elements are removed from the metal.
- (j) "Meltdown and refining period" means the time period commencing at the termination of the initial charging period and ending at the initiation of the tapping period, excluding any intermediate charging periods.
- (k) "Shop opacity" means the arithmetic average of 24 or more opacity observations of emissions from the shop taken in accordance with Method 9 of Appendix A to this regulation for the applicable time periods.
- (l) "Heat time" means the period commencing when scrap is charged to an empty EAF and terminating when the EAF tap is completed.
- (m) "Shop" means the building which houses one or more EAF's.
- (n) "Direct shell evacuation system" means any system that maintains a negative pressure within the EAF above the slag or metal and ducts these emissions to the control device.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be

discharged into the atmosphere from an electric arc furnace any gases which:

- (i) Exit from a control device and contain particulate matter in excess of 12 mg/dscm (0.0052 gr/dscf).
- (ii) Exit from a control device and exhibit three percent opacity or greater.
- (iii) Exit from a shop and, due solely to operation of any EAF(s), exhibit greater than zero percent shop opacity except:
 - ((a)) Shop opacity greater than zero percent, but less than 20 percent, may occur during charging periods.
 - ((b)) Shop opacity greater than zero percent, but less than 40 percent, may occur during tapping periods.
 - ((c)) Opacity standards under subdivision (a)(iii) of this division shall apply only during periods when flow rates and pressures are being established under 12.424(5)(c) and (f).
 - ((d)) Where the capture system is operated such that the roof of the shop is closed during the charge and the tap, and emissions to the atmosphere are prevented until the roof is opened after completion of the charge or tap, the shop opacity standards under subdivision (a)(iii) of the division shall apply when the roof is opened and shall continue to apply for the length of time defined by the charging and/or tapping periods.
- (b) On and after the date on which the performance test required to be conducted by subsection 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere from dust-handling equipment any gases which exhibit 10 percent opacity or greater.

(4) Emission Monitoring

- (a) A continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the control device(s) shall be installed, calibrated, maintained, and operated by the owner or operator subject to the provisions of this subsection.
- (b) For the purpose of reports under subsection 12.106(3), periods of excess emissions that shall be reported are defined as all six-minute periods during which the average opacity is three percent or greater.

(5) Monitoring of Operations

- (a) The owner or operator subject to the provisions of this subsection shall maintain records daily of the following information:
 - (i) Time and duration of each charge;
 - (ii) Time and duration of each tap;
 - (iii) All flow rate data obtained under subdivision (b) of this division, or equivalent obtained under subdivision (d) of this division; and
 - (iv) All pressure data obtained under subdivision (e) of this division.
- (b) Except as provided under subdivision (d) of this division, the owner or operator subject to the provisions of this subsection shall install, calibrate, and maintain a monitoring device that continuously records the volumetric flow rate through each separately ducted hood. The monitoring device(s) may be installed in any appropriate location in the exhaust duct such that reproducible flow rate monitoring will result. The flow rate monitoring device(s) shall have an accuracy of ± 10 percent over its normal operating range and shall be calibrated according to the manufacturer's instructions. The Department may require the owner or operator to demonstrate the accuracy of the monitoring device(s) relative to Methods 1 and 2 of Appendix A of this regulation.

- (c) When the owner or operator of an EAF is required to demonstrate compliance with the standard under 12.424(3)(a)(iii) and at any other time the Department may require, the volumetric flow rate through each separately ducted hood shall be determined during all periods in which the hood is operated for the purpose of capturing emission from the EAF using the monitoring device under subdivision (b) of this division. The owner or operator may petition the Department for re-establishment of these flow rates whenever the owner or operator can demonstrate to the Department's satisfaction that the EAF operating conditions upon which the flow rates were previously established are no longer applicable. The flow rates determined during the most recent demonstration of compliance shall be maintained (or may be exceeded) at the appropriate level for each applicable period. Operation at lower flow rates may be considered by the Department to be unacceptable operation and maintenance of the affected facility.
- (d) The owner or operator may petition and the Department to approve any alternative method that will provide a continuous record of operation of each emission capture system.
- (e) Where emissions during any phase of the heat time are controlled by use of a direct shell evacuation system, the owner or operator shall install, calibrate, and maintain a monitoring device that continuously records the pressure in the free space inside the EAF. The pressure shall be recorded as 15-minute integrated averages. The monitoring device may be installed in any appropriate location in the EAF such that reproducible results will be obtained. The pressure monitoring device shall have an accuracy of ± 5 mm of water gauge over its normal operating range and shall be calibrated according to the manufacturer's instructions.
- (f) When the owner or operator of an EAF is required to demonstrate compliance with the standard under 12.424(3)(a)(iii) and at any other time the Department may require, the pressure in the free space inside the furnace shall be determined during the meltdown and refining period(s) using the monitoring device under subdivision (e) of this division. The owner or operator may petition the Department for re-establishment of the 15-minute integrated average pressure whenever the owner or operator can demonstrate to the Department's satisfaction that the EAF operating conditions

upon which the pressures were previously established are no longer applicable. The pressure determined during the most recent demonstration of compliance shall be maintained at all times the EAF is operating in a meltdown and refining period. Operation at higher pressures may be considered by the Department to be unacceptable operation and maintenance of the affected facility.

- (g) Where the capture system is designed and operated such that all emissions are captured and ducted to a control device, the owner or operator shall not be subject to the requirements of this division.

(6) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided under subsection 12.107(2), shall be used to determine compliance with the standards prescribed under subsection 12.424(3) as follows:
 - (i) Method 5 for concentration of particulate matter and associated moisture content;
 - (ii) Method 1 for sample and velocity traverses;
 - (iii) Method 2 for velocity and volumetric flow rate; and
 - (iv) Method 3 for gas analysis.
- (b) For Method 5, the sampling time for each run shall be at least four hours. When a single EAF is sampled, the sampling time for each run shall also include an integral number of heats. Shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. The minimum sample volume shall be 4.5 dscm (160 dscf).
- (c) For the purpose of this subsection, the owner or operator shall conduct the demonstration of compliance with subsection 12.424(3)(a)(iii) and furnish the Department a written report of the results of the test.
- (d) During any performance test required under subsection 12.107 of this regulation, no gaseous dilutents may be added to the effluent gas stream after the fabric in

any pressurized fabric filter collector, unless the amount of dilution is separately determined and considered in the determination of emissions.

- (e) When more than one control device serves the EAF(s) being tested, the concentration of particulate matter shall be determined using the following equation:

$$C_3 = \frac{\sum_{n=1}^N (C_3 Q_s)_n}{\sum_{n=1}^N (Q_s)_n}$$

where:

C_3 = Concentration of particulate matter mg/dscm (gr/dscf) as determined by Method 5.

N = Total number of control devices tested.

Q_s = Volumetric flow rate of the effluent gas stream in dscm/hr (dscf/hr) as determined by Method 2.

$(C_3 Q_s)_n$ or $(Q_s)_n$ = Value of the applicable parameter for each control device tested.

- (f) Any control device subject to the provisions of this subsection shall be designed and constructed to allow measurement of emissions using applicable test methods and procedures.
- (g) Where emissions from any EAF(s) combined with emissions from facilities not subject to the provisions of this subsection but controlled by a common capture system and control device, the owner or operator may use any of the following procedures during a performance test:
- (i) Base compliance on control of combined emissions.
 - (ii) Utilize a method acceptable to the Department which compensates for the emissions from the facilities not subject to the provisions of this subsection.
 - (iii) Any combination of the criteria of subdivisions (g) and (g)(ii) of this division.

(h) Where emissions from any EAF(s) are combined with emissions from facilities not subject to the provisions of this subsection, the owner or operator may use any of the following procedures for demonstrating compliance with subsection 12.424(3) (a) (iii):

- (i) Base compliance on control of the combined emissions
- (ii) Shutdown operation of facilities not subject to the provisions of this subsection.
- (iii) Any combination of the criteria of subdivisions (h) (i) and (h) (ii) of this division.

12.425 Standards of Performance for Kraft Pulp Mills

(1) Applicability and Designation of Affected Facility

(a) The provisions of this subsection are applicable to the following affected facilities in kraft pulp mills: digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, recovery furnace, smelt dissolving tank, lime kiln, and condensate stripper system. In pulp mills where kraft pulping is combined with neutral sulfite semichemical pulping, the provisions of this subsection are applicable when any portion of the material charged to an affected facility is produced by the kraft pulping operation.

(2) Definitions

As used in this subsection, all terms not defined herein shall have the same meaning given them in the Act and in subsection 12.102.

- (a) "Kraft pulp mill" means any stationary source which produces pulp from wood by cooking (digesting) wood chips in a water solution of sodium hydroxide and sodium sulfide (white liquor) at high temperature and pressure. Regeneration of the cooking chemicals through a recovery process is also considered part of the kraft pulp mill.
- (b) "Neutral sulfite semichemical pulping operation" means any operation in which pulp is produced from wood by cooking (digesting) wood chips in a solution of sodium sulfite and sodium bicarbonate, followed by mechanical defibrating (grinding).
- (c) "Total reduced sulfur (TRS)" means the sum of the sulfur compounds hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide, that are released during the kraft pulping operation and measured by Reference Method 16.

- (d) "Digester system" means each continuous digester or each batch digester used for the cooking of wood in white liquor, and associated flash tank(s), below tank(s), chip steamer(s), and condenser(s).
- (e) "Brown stock washer system" means brown stock washers and associated knotters, vacuum pumps, and filtrate tanks used to wash the pulp following the digester system.
- (f) "Multiple-effect evaporator system" means the multiple-effect evaporators and associated condenser(s) and hotwell(s) used to concentrate the spent cooking liquid that is separated from the pulp (black liquor).
- (g) "Black liquor oxidation system" means the vessels used to oxidize, with air or oxygen, the black liquor, and associated storage tank(s).
- (h) "Recovery furnace" means either a straight kraft recovery furnace or a cross recovery furnace, and includes the direct-contact evaporator for a direct-contact furnace.
- (i) "Straight kraft recovery furnace" means a furnace used to recover chemicals consisting primarily of sodium and sulfur compounds by burning black liquor which on a quarterly basis contains 7 weight percent or less of the total pulp solids from the neutral sulfite semichemical process or has green liquor sulfidity of 28 percent or less.
- (j) "Cross recovery furnace" means a furnace used to recover chemicals consisting primarily of sodium and sulfur compounds by burning black liquor which on a quarterly basis contains more than 7 weight percent of the total pulp solids from the neutral sulfite semichemical process and has a green liquor sulfidity of more than 28 percent.
- (k) "Black liquor solids" means the dry weight of the solids which enter the recovery furnace in the black liquor.
- (l) "Green liquor sulfidity" means the sulfidity of the liquor which leaves the smelt dissolving tank.
- (m) "Smelt dissolving tank" means a vessel used for dissolving the smelt collected from the recovery furnace.
- (n) "Lime kiln" means a unit used to calcine lime mud, which consists primarily of calcium carbonate, into quicklime, which is calcium oxide.
- (o) "Condensate stripper system" means a column, and associated condensers, used to strip, with air or steam, TRS compounds from condensate streams from various processes within a kraft pulp mill.

(3) Standard for Particulate Matter

(a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere:

(i) From any recovery furnace any gases which:

((a)) Contain particulate matter in excess of 0.10 g/dscm (0.044 gr/dscf) corrected to 8 percent oxygen.

((b)) Exhibit 35 percent opacity or greater.

(ii) From any smelt dissolving tank any gases which contain particulate matter in excess of 0.1 g/kg black liquor solids (dry weight) [0.2 lb/ton black liquor solids (dry weight)].

(iii) From any lime kiln any gases which contain particulate matter in excess of:

((a)) 0.15 g/dscm (0.067 gr/dscf) corrected to 10 percent oxygen, when gaseous fossil fuel is burned.

((b)) 0.30 g/dscm (0.13 gr/dscf) corrected to 10 percent oxygen, when liquid fossil fuel is burned.

(4) Standard for Total Reduced Sulfur (TRS)

(a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere:

(i) From any digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, or condensate stripper system any gases which contain TRS in excess of 5 ppm by volume on a dry basis, corrected to 10 percent oxygen, unless the following conditions are met:

((a)) The gases are combusted in a lime kiln subject to the provisions of paragraph (a) (v) of this division, or

((b)) The gases are combusted in a recovery furnace subject to the provisions of paragraphs (a) (ii) or (a) (iii) of this division, or

((c)) The gases are combusted with other waste gases in an incinerator or other device, or combusted in a lime kiln or recovery furnace not subject to the provisions of this subsection, and are subjected to

a minimum temperature of 1200 degrees F. for at least 0.5 second; or

- ((d)) It has been demonstrated to the Department's satisfaction by the owner or operator that incinerating the exhaust gases from a new, modified, or reconstructed black liquor oxidation system or brown stock washer system in an existing facility is technologically or economically not feasible. Any exempt system will become subject to the provisions of this subsection if the facility is changed so that the gases can be incinerated.
- (ii) From any straight kraft recovery furnace any gases which contain TRS in excess of 5 ppm by volume on a dry basis, corrected to 8 percent oxygen.
- (iii) From any cross recovery furnace any gases which contain TRS in excess of 25 ppm by volume on a dry basis, corrected to 8 percent oxygen.
- (iv) From any smelt dissolving tank any gases which contain TRS in excess of 0.0084 g/kg black liquor solids (dry weight) [0.0168 lb/ton liquor solids (dry weight)].
- (v) From any lime kiln any gases which contain TRS in excess of 8 ppm by volume on a dry basis, corrected to 10 percent oxygen.

(5) Monitoring of Emissions and Operations

- (a) Any owner or operator subject to the provisions of this subsection shall install, calibrate, maintain, and operate the following continuous monitoring systems:
 - (i) A continuous monitoring system to monitor and record the opacity of the gases discharged into the atmosphere from any recovery furnace. The span of this system shall be set at 70 percent opacity.
 - (ii) Continuous monitoring systems to monitor and record the concentration of TRS emissions on a dry basis and the percent of oxygen by volume on a dry basis in the gases discharged into the atmosphere from any lime kiln, recovery furnace, digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, or condensate stripper system, except where the provisions of 12.425(4)(a)(i)(c) or (d) apply. These systems shall be located downstream of the control device(s) and the span(s) of these continuous monitoring system(s) shall be set:
 - ((a)) At a TRS concentration of 30 ppm for the TRS con-

tinuous monitoring system, except that for any cross recovery furnace the span shall be set at 50 ppm.

((b)) At 20 percent oxygen for the continuous oxygen monitoring system.

(b) Any owner or operator subject to the provisions of this subsection shall install, calibrate, maintain, and operate the following continuous monitoring devices:

(i) A monitoring device which measures the combustion temperature at the point of incineration of effluent gases which are emitted from any digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, or condensate stripper system where the provisions of 12.425 (4) (a) (i) ((c)) apply. The monitoring device is to be certified by the manufacturer to be accurate within plus or minus 1 percent of the temperature being measured.

(ii) For any lime kiln or smelt dissolving tank using a scrubber emission control device:

((a)) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the control equipment. The monitoring device is to be certified by the manufacturer to be accurate to within [a garage pressure] plus or minus 500 pascals (ca. plus or minus 2 inches water gage pressure).

((b)) A monitoring device for the continuous measurement of the scrubbing liquid supply pressure to the control equipment. The monitoring device is to be certified by the manufacturer to be accurate within plus or minus 15 percent of design scrubbing liquid supply pressure. The pressure sensor or tap is to be located close to the scrubber liquid discharge point. The Department may be consulted for approval of alternative locations.

(c) Any owner or operator subject to the provisions of this subsection shall, except where the provisions of 12.425 (4) (a) (i) ((d)) or 12.425 (4) (a) (iv) apply.

(i) Calculate and record on a daily basis 12-hour average TRS concentrations for the two consecutive periods of each operating day. Each 12-hour average shall be determined as the arithmetic mean of the appropriate 12 contiguous 1-hour average total reduced sulfur concentrations provided by each continuous monitoring system installed under paragraph (a) (ii) of this division.

(ii) Calculate and record on a daily basis 12-hour average

oxygen concentrations for the two consecutive periods of each operating day for the recovery furnace and lime kiln. These 12-hour averages shall correspond to the 12-hour average TRS concentrations under paragraph (c) (i) of this division and shall be determined as an arithmetic mean of the appropriate 12 contiguous 1-hour average oxygen concentrations provided by each continuous monitoring system installed under paragraph (a) (ii) of this division.

- (iii) Correct all 12-hour average TRS concentrations to 10 volume percent oxygen, except that all 12-hour average TRS concentration from a recovery furnace shall be corrected to 8 volume percent using the following equation:

$$C_{corr} = C_{meas} \times (21-X/21-Y)$$

where:

C_{corr} = the concentration corrected for oxygen.

C_{meas} = the concentration uncorrected for oxygen.

X = the volumetric oxygen concentration in percentage (to be corrected to 8 percent for recovery furnaces and 10 percent for lime kilns, incinerators, or other devices).

Y = the measured 12-hour average volumetric oxygen concentration.

- (d) For the purpose of reports required under 12.106(3), any owner or operator subject to the provisions of this subsection shall report periods of excess emissions as follows:
- (i) For emissions from any recovery furnace periods of excess emissions are:
- ((a)) All 12-hour averages of TRS concentrations above 5 ppm by volume for straight kraft recovery furnaces and above 25 ppm by volume for cross recovery furnaces.
- ((b)) All 6-minute average opacities that exceed 35 percent.
- (ii) For emissions from any lime kiln, periods of excess emissions are all 12-hour average TRS concentration above 8 ppm by volume.

- (iii) For emissions from any digester system, brown stock washer system, multiple-effect evaporator system, black liquor oxidation system, or condensate stripper system periods of excess emissions are:
 - ((a)) All 12-hour average TRS concentrations above 5 ppm by volume unless the provisions of 12.425(4) (a) (i) ((a)), ((b)), or ((d)) apply; or
 - ((b)) All periods in excess of 5 minutes and their duration during which the combustion temperature at the point of incineration is less than 1200 degrees F. where the provisions of 12.425(4) (a) (i) ((b)) apply.
- (e) The Department will not consider periods of excess emissions reported under subdivision (d) of this division to be indicative of a violation of 12.109(4) provided that:
 - (i) The percent of the total number of possible contiguous periods of excess emissions in a quarter (excluding periods of startup, shutdown, or malfunction and periods when the facility is not operating) during which excess emissions occur does not exceed:
 - ((a)) One percent for TRS emissions from recovery furnaces.
 - ((b)) Six percent for average opacities from recovery furnaces.
 - (ii) The Department determines that the affected facility, including air pollution control equipment, is maintained and operated in a manner which is consistent with good air pollution control practice for minimizing emissions during periods of excess emissions.
- (6) Test Methods and Procedures
 - (a) Reference methods in Appendix A of this regulation, except as provided under 12.107(2) shall be used to determine compliance with 12.425(3) (a) as follows:
 - (i) Method 5 for the concentration of particulate matter and the associated moisture content,
 - (ii) Method 1 of sample and velocity traverses,
 - (iii) When determining compliance with 12.425(3) (a), Method 2 for velocity and volumetric flow rate,
 - (iv) Method 3 for gas analysis, and
 - (v) Method 9 for visible emissions.
 - (b) For Method 5, the sampling time for each run shall be at

least 60 minutes and the sampling rate shall be at least 0.85 dscm/hr (0.53 dscf/min) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department. Water shall be used as the cleanup solvent instead of acetone in the sample recovery procedure outlined in Method 5.

(c) Method 17 (in-stack filtration) may be used as an alternate method for Method 5 for determining compliance with 12.425 (3) (a) (i) ((a)): Provided, That a constant value of 0.009 g/dscm (0.004 gr/dscf) is added to the results of Method 17 and the stack temperature is no greater than 205 degrees C (ca. 400 degrees F). Water shall be used as the cleanup solvent instead of acetone in the sample recovery procedure outlined in Method 17.

(d) For the purpose of determining compliance with 12.524(4) (a) (i), (ii), (iii), (iv), and (v), the following reference methods shall be used:

(i) Method 16 for the concentration of TRS.

(ii) Method 3 for gas analysis and

(iii) When determining compliance with 12.425(4) (a) (iv), use the results of Method 2, Method 16, and the black liquor solids feed rate in the following equation to determine the TRS emission rate.

$$E = (CH_2S \text{ PH}_2S + CH_3SH \text{ PMeSH} + CDMS \text{ PDMS} + CDMDs \text{ PDMDs}) (Q_{sd}) / BLS$$

where:

E = mass of TRS emitted per unity of black liquor solids (g/kg) (lb/ton).

CH₂S = average concentration of hydrogen sulfide (H₂S) during the test period, PPM.

CH₃SH = average concentration of methyl mercaptan (MeSH) during the test period, PPM.

CDMS = average concentration of dimethyl sulfide (DMS) during the test period, PPM.

CDMDs = average concentration of dimethyl disulfide (DMDs) during the test period, PPM.

PH₂S = 0.001417 g/m³ PPM (0.08844 lb/ft³ PPM)

PMeSH = 0.00200 g/m³ PPM (0.1248 lb/ft³ PPM)

PDMS = 0.002583 g/m³ PPM (0.1612 lb/ft³ PPM)

FDMS = 0.003917 g/m³ PPM (0.2445 lb/ft³ PPM)

Qsd = dry volumetric stack gas flow rate corrected to standard

BLS = black liquor solids feed rate, kg/hr (lb/hr)

- (iv) When determining whether a furnace is straight kraft recovery furnace or a cross recovery furnace TAPPI Method T.624 shall be used to determine sodium sulfide, sodium hydroxide and sodium carbonate. These determinations shall be made three times daily from the green liquor and the daily average values shall be converted to sodium oxide (Na₂O) and substituted into the following equation to determine the green liquor sulfidity:

$$GLS = 100 \text{ CNa}_2\text{S} / \text{CNa}_2\text{S} + \text{CNaOH} + \text{CNa}_2\text{CO}_3$$

where:

GLS = percent green liquor sulfidity

CNa₂S = average concentration of Na₂S expressed as Na₂O (mg/l)

CNaOH = average concentration of NaOH expressed as Na₂O (mg/l)

CNa₂CO₃ = average concentration of Na₂CO₃ expressed as Na₂O (mg/l)

- (e) All concentrations of particulate matter and TRS required to be measured by this section from lime kilns or incinerators shall be corrected 10 volume percent oxygen and those concentrations from recovery furnaces shall be corrected to 8 volume percent oxygen. These corrections shall be made in the manner specified in 12.425(5)(c)(iii).

12.426 Standards of Performance for Lime Manufacturing Plants

(1) Applicability and Designation of Affected Facility

- (a) The provisions of this subsection are applicable to the following affected facilities used in the manufacture of lime: rotary lime kilns and lime hydrators.
- (b) The provisions of this subsection are not applicable to facilities used in the manufacture of lime at kraft pulp mills.

(2) Definitions

As used in this subsection all terms not defined herein shall have the same meaning given them in the Act and in subsection 12.102 of this regulation.

- (a) "Lime manufacturing plant" includes any plant which produces a lime product from limestone by calcination. Hydration of the lime product is also considered to be part of the source.
- (b) "Lime product" means the product of the calcination process including, but not limited to, calcitic lime, dolomitic lime, and dead-burned dolomite.
- (c) "Rotary lime kiln" means a unit with an inclined rotating drum which is used to produce a lime product from limestone by calcination.
- (d) "Lime hydrator" means a unit used to produce hydrated lime product.

(3) Standard for Particulate Matter

- (a) On and after the date on which the performance test required to be conducted by 12.107 is completed, no owner or operator subject to the provisions of this subsection shall cause to be discharged into the atmosphere:
 - (i) From any rotary lime kiln any gases which:
 - ((a)) Contain particulate matter in excess of 0.15 kilogram per megagram of limestone feed (0.30 lb/ton).
 - ((b)) Exhibit 10 percent opacity or greater.
 - (ii) From any lime hydrator any gases which contain particulate matter in excess of 0.075 kilogram per megagram of lime feed (0.15 lb/ton).

(4) Monitoring of Emissions and Operations

- (a) The owner or operator subject to the provisions of this subsection shall install, calibrate, maintain, and operate a continuous monitoring system, except as provided in subdivision (b) of this division, to monitor and record the opacity of a representative portion of the gases discharged into the atmosphere from any rotary lime kiln. The span of this system shall be set at 40 percent opacity.
- (b) The owner or operator of any rotary lime kiln using a wet scrubbing emission control device subject to the provisions of this subsection shall not be required to monitor the opacity of the gases discharged as required in subdivision (a) of this division, but shall install, calibrate, maintain and operate the following continuous monitoring devices:
 - (i) A monitoring device for the continuous measurement of the pressure loss of the gas stream through the scrubber. The monitoring device must be accurate within

plus or minus 250 pascals (one inch of water).

- (ii) A monitoring device for the continuous measurement of the scrubbing liquid supply pressure to the control device. The monitoring device must be accurate within plus or minus 5 percent of design scrubbing liquid supply pressure.
- (c) The owner or operator of any lime hydrator using a wet scrubbing emission control device subject to the provisions of this subsection shall install, calibrate, maintain, and operate the following continuous monitoring devices:
 - (i) A monitoring device for the continuous measuring of the scrubbing liquid flow rate. The monitoring device must be accurate within plus or minus 5 percent of the design scrubbing liquid flow rate.
 - (ii) A monitoring device for the continuous measurement of the electric current, in amperes, used by the scrubber. The monitoring device must be accurate within plus or minus 10 percent over its normal operating range.
- (d) For the purpose of conducting a performance test under 12.107, the owner or operator of any lime manufacturing plant subject to the provisions of this subsection shall install, calibrate, maintain, and operate a device for measuring the mass rate of limestone feed to any affected rotary lime kiln and the mass rate of lime feed to any affected lime hydrator. The measuring device used must be accurate to within plus or minus 5 percent of the mass rate over its operating range.
- (e) For the purpose of reports required under 12.106(3), periods of excess emissions that shall be reported are defined as all six-minute periods during which the average opacity of the plume from any lime kiln subject to subdivision (a) of this division is 10 percent or greater.

(5) Test Methods and Procedures

- (a) Reference methods in Appendix A of this regulation, except as provided under 12.107(2), shall be used to determine compliance with 12.426(3) (a) as follows:
 - (i) Method 5 for the measurement of particulate matter,
 - (ii) Method 1 for sample and velocity traverses,
 - (iii) Method 2 for velocity and volumetric flow rate,
 - (iv) Method 3 for gas analysis,
 - (v) Method 4 for stack gas moisture, and

(vi) Method 9 for visible emissions.

- (b) For Method 5, the sampling time for each run shall be at least 60 minutes and the sampling rate shall be at least 0.85 std m³/hr, dry basis (0.53 dscf/min), except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the Department.
- (c) Because of the high moisture content (40 to 85 percent by volume) of the exhaust gases from hydrators, the Method 5 sample train may be modified to include a calibrated orifice immediately following the sample nozzle when testing lime hydrators. In this configuration, the sampling rate necessary for maintaining isokinetic conditions can be directly related to exhaust gas velocity without a correction for moisture content. Extra care should be exercised when cleaning the sample train with the orifice in this position following the test runs.

APPENDIX A - REFERENCE METHODS

The reference methods specified within R23-25-12 are identical to those specified in Appendix A, as amended, of Title 40 Code of Federal Regulations, Part 60 (40 CFR 60). The methods, adopted by reference, are as follows:

- Method 1 - Sample and Velocity Traverses for Stationary Sources "REVISED"
- Method 2 - Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube) "REVISED"
- Method 3 - Gas Analysis for Carbon Dioxide, Excess Air, and Dry Molecular Weight "REVISED"
- Method 4 - Determination of Moisture in Stack Gases "REVISED"
- Method 5 - Determination of Particulate Emissions from Stationary Sources "REVISED"
- Method 6 - Determination of Sulfur Dioxide Emissions from Stationary Sources "REVISED"
- Method 7 - Determination of Nitrogen Oxide Emissions from Stationary Sources "REVISED"
- Method 8 - Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources "REVISED"
- Method 9 - Visual Determination of the Opacity of Emissions from Stationary Sources
- Method 10 - Determination of Carbon Monoxide Emission from Stationary Sources
- Method 11 - Determination of Hydrogen Sulfide Emissions from Stationary Sources "REVISED"
- Method 12 - Reserved
- Method 13A - Determination of Total Fluoride Emissions from Stationary Sources - SPADNS Zirconium Lake Method "REVISED"
- Method 13B - Determination of Total Fluoride Emissions from Stationary Sources - Specific Ion Electrode Method "REVISED"

- Method 14 - Determination of Fluoride Emissions from Potroom Roof Monitors of Primary Aluminum Plants. "NEW METHOD"
- Method 15 - Determination of Hydrogen Sulfide, Carbonyl Sulfide, and Carbon Disulfide Emissions from Stationary Sources. "NEW METHOD"
- Method 16 - Semicontinuous Determination of Sulfur Emissions from Stationary Sources. "NEW METHOD"
- Method 17 - Determination of Particulate Emissions from Stationary Sources (In-stack Filtration Method.) "NEW METHOD"

APPENDIX B - PERFORMANCE SPECIFICATIONS

The performance specifications specified within R23-25-12 are identical to those specified in Appendix B, as amended, of Title 40 Code of Federal Regulations, Part 60 (40 CFR 60). The specifications, adopted by reference, are as follows:

- Performance Specification 1 - Performance specifications and specification test procedures for transmissometer systems for continuous measurement of the opacity of stack emission. "REVISED"
- Performance Specification 2 - Performance specifications and specification test procedures for monitors of SO_2 and NO_x from stationary sources. "REVISED"
- Performance Specification 3 - Performance specifications and specification test procedures for monitors of CO_2 and O_2 from stationary sources.

R23-25-13 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

13.100 GENERAL PROVISIONS

13.101 Applicability

The provisions of this regulation apply to the owner or operator of any stationary source for which a standard is prescribed under this regulation.

13.102 Definitions

As used in this regulation, all terms not defined herein shall have the meaning given them in the Act or in subsection 1.040. Terms defined, both in this subsection and in subsection 1.040, shall have the meaning given them in this subsection:

- (1) "Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference method or an equivalent method but which has been demonstrated to the Department's satisfaction to produce, in specific cases, results adequate for determination of compliance.
- (2) "Commenced" means that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.
- (3) "Compliance schedule" means the date or dates by which a source or category of sources is required to comply with the standards of this regulation and with any steps toward such compliance which are set forth under subsection 13.109.
- (4) "Construction" means fabrication, erection, or installation of a stationary source.
- (5) "Effective date" is the date of promulgation in the North Dakota Air Pollution Control Regulations of an applicable standard or other limitation under this regulation.
- (6) "Equivalent method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the Department's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.

- (7) "Existing source" means any stationary source which is not a new source.
- (8) "Modification" means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any hazardous air pollutant emitted by such source or which results in the emission of any hazardous air pollutant not previously emitted, except that:
 - (a) Routine maintenance, repair, and replacement shall not be considered physical changes, and
 - (b) The following shall not be considered a change in the method of operation:
 - (i) An increase in the production rate, if such increase does not exceed the operating design capacity of the stationary source;
 - (ii) An increase in hours of operation.
- (9) "New source" means any stationary source, the construction or modification of which is commenced after the effective date of this regulation.
- (10) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.
- (11) "Reference method" means any method of sampling and analyzing for an air pollutant, as described in Appendix B to this regulation.
- (12) "Startup" means the setting in operation of a stationary source for any purpose.
- (13) "Standard" means an emission standard for a hazardous air pollutant promulgated under this regulation.
- (14) "Stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant which has been designated as hazardous by the Department.

13.103 Abbreviations

The abbreviations used in this part have the following meanings:

- °C - Degrees Centigrade (Celsius)
- cfm - Cubic feet per minute
- ft² - Square feet

ft ³	- Cubic feet.
°F	- Degrees Fahrenheit
in	- Inch
l	- Liter
ml	- Milliliter (10 ⁻³ liter)
m	- Molar
m ³	- Cubic meter
nm	- Nanometer (10 ⁻⁹ meter)
oz	- Ounce
v/v	- Volume per volume
yd ²	- Square yard
w.g.	- Water gage
in Hg	- Inches of mercury
in H ₂ O	- Inches of water
g	- Gram
mg	- Milligram (10 ⁻³ gram)
N	- Normal
°R	- Degree Rankine
min	- Minute
sec.	- Second
avg.	- Average
I.D.	- Inside diameter
O.D.	- Outside diameter.
ug	- Microgram (10 ⁻⁶ gram)
%	- Percent
Hg	- Mercury
Be	- Beryllium

13.104 Prohibited Activities

- (1) After the effective date of any standard prescribed under this regulation, no owner or operator shall construct or modify any stationary source subject to such standard without first obtaining a permit to construct from the Department, except under an exemption granted by the President under Section 112(c)(2) of the Federal Clean Air Act.
- (2) After the effective date of any standard prescribed under this regulation, no owner or operator shall operate any new source in violation of such standard except under an exemption granted by the President under Section 112(c)(2) of the Federal Clean Air Act.
- (3) Ninety days after the effective date of any standard prescribed under this regulation, no owner or operator shall operate any existing stationary source in violation of such standard, except under a permit to operate with an attached compliance schedule granted by the Department pursuant to subsection 13.108(2) or under an exemption granted by the President under Section 112(c)(2) of the Federal Clean Air Act.

- (4) No owner or operator subject to the provisions of this regulation shall fail to report, revise reports, or report source test results as required under this regulation.

13.105 Determination of Construction or Modification

Upon written application by an owner or operator, the Department shall make a determination of whether actions taken or intended to be taken by such owner or operator constitute construction or modification or the commencement thereof within the meaning of this section. The Department will, within 30 days of receipt of sufficient information to evaluate an application, notify the owner or operator of its determination. Nothing in this subsection, nor any action taken pursuant to this subsection, shall prevent the Department from making such a determination upon its own initiative, nor prevent the Department from making any subsequent re-determination or taking any other action allowed by law.

13.106 Application for Permit to Construct

- (1) The owner or operator of any new source to which a standard prescribed under this regulation is applicable shall, prior to the date on which construction or modification is planned to commence, apply for and receive a permit to construct as provided in Section 14.200 of these regulations.

13.107 Notification of Startup

- (1) Any owner or operator of a source which has an initial startup date after the effective date of a standard prescribed under this regulation shall furnish the Department written notification as follows:
 - (a) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days prior to such date.
 - (b) A notification of the actual date of initial startup of the source within 15 days after such date.

13.108 Source Reporting and Application for Permit to Operate

- (1) The owner or operator of any existing source, or any new source to which a standard prescribed under this regulation is applicable which had an initial startup

date which preceded the effective date of a standard prescribed under this regulation, shall, within 90 days after the effective date, provide the following information in writing to the Department:

- (a) Name and address of the owner or operator.
 - (b) The location of the source.
 - (c) The type of hazardous pollutants emitted by the stationary source.
 - (d) A brief description of the nature, size, design and method of operation of the stationary source including the operating design capacity of such source and identify each point of emission for each hazardous pollutant.
 - (e) The average weight per month of the hazardous materials being processed by the source, over the last 12 months preceding the date of the report.
 - (f) A description of the existing control equipment for each emission point, including:
 - (i) Primary control device(s) for each hazardous pollutant.
 - (ii) Secondary control device(s) for each hazardous pollutant.
 - (iii) Estimated control efficiency (percent) for each control device.
 - (g) A statement by the owner or operator of the source as to whether he can comply with the standards prescribed in this regulation within 90 days of the effective date.
- (2) The owner or operator of an existing source unable to operate in compliance with any standard prescribed under this regulation may request the Department to grant a permit to operate with an attached compliance schedule requiring compliance with the standard within 2 years of the effective date of such standard. Any request shall be in writing and shall include the following information:
- (a) A description of the controls to be installed to comply with the standard.

- (b) A compliance schedule, listing the date each step toward compliance will be reached. Such list shall include as a minimum the following dates:
 - (i) Date by which contracts for emission control systems or process modifications will be awarded, or date by which orders will be issued for the purchase of component parts to accomplish emission control or process modification;
 - (ii) Date of initiation of on-site construction or installation of emission control equipment or process change;
 - (iii) Date by which on-site construction or installation of emission control equipment or process modification is to be completed; and
 - (iv) Date by which final compliance is to be achieved.
 - (c) A description of interim emission control steps which will be taken during the compliance schedule period.
- (3) Changes in the information provided under division (1) of this subsection shall be provided to the Department within 30 days after such change, except that if changes will result in modification of the source, the provisions of 13.106 are applicable.
 - (4) The format for reporting under this subsection is included as Appendix A to this regulation. Advice on reporting the status of compliance may be obtained from the Department.

13.109 Permit and Compliance Schedule

- (1) Based on the information provided in any request under 13.108, or other information, the Department may grant a permit to operate with an attached compliance schedule not exceeding 2 years from the effective date of such standard.
- (2) Such permit will be in writing and will, as a minimum:
 - (a) Identify the stationary source covered.
 - (b) Specify the date upon which the standard is to be met. The permit may be revoked or suspended if the

standard is not met by the date specified or if the conditions specified under division (2)(c) of this subsection are not met.

- (c) Specify dates by which steps toward compliance are to be taken; and impose such additional conditions as the Department determines to be necessary to assure installation of the necessary controls within the compliance schedule period, and to assure protection of the health of persons during such period.
- (3) Prior to denying any request for a permit pursuant to this subsection, the Department will notify the owner or operator making such request of the Department's intention to issue such denial, together with:
 - (a) Notice of the information and findings on which such intended denial is based, and
 - (b) Notice of opportunity for such owner or operator to present, within such time limit as the Department specifies, additional information or arguments to the Department prior to final action on such request.
- (4) A final determination to deny any request for a permit under this subsection will be in writing and will set forth the specific grounds on which such denial is based. Such final determination will be made within 60 days after presentation of additional information or arguments, or 60 days after the final date specified for such presentation, if no presentation is made.
- (5) The granting of a permit under this subsection shall not abrogate the Department's authority under Sections 1.050, 14.209 and 14.306 of these regulations.

13.110 Emission Tests and Monitoring

- (1) Emission tests and monitoring shall be conducted and reported as set forth in this regulation and Appendix B to this regulation.
- (2) The owner or operator of a new source subject to this regulation, and otherwise at the request of the Department, the owner or operator of an existing source subject to this regulation, shall provide or cause to be provided, emission testing facilities as follows:
 - (a) Sampling ports adequate for test methods applicable to such source.

- (b) Safe sampling platform(s).
- (c) Safe access to sampling platform(s).
- (d) Utilities for sampling and testing equipment.

13.111 Waiver of Emission Tests

- (1) Emission tests may be waived upon written application to the Department if, in its judgment, the source is meeting the standard, or if the source is operating under a permit granted under subsection 13.109 or has requested such permit.
- (2) If application for waiver of the emission test is made, such application shall accompany the information required by subsection 13.108. The appropriate form is contained in Appendix A to this regulation.
- (3) Approval of any waiver granted pursuant to this subsection shall not abrogate the Department's authority under the Act or in any way prohibit the Department from later canceling such waiver. Such cancellation will be made only after notice is given to the owner or operator of the source.

13.112 Source Test and Analytical Methods

- (1) Methods 101, 102, and 104 in Appendix B to this regulation shall be used for all source tests required under this regulation, unless an equivalent method or an alternative method has been approved by the Department.
- (2) Method 103 in Appendix B to this regulation is hereby approved by the Department as an alternative method for sources subject to 13.303(1) and 13.403(2).
- (3) The Department may, after notice to the owner or operator, withdraw approval of an alternative method granted under divisions (1), (2) or (4) of this subsection. Where the test results using an alternative method do not adequately indicate whether a source is in compliance with a standard, the Department may require the use of the reference method or its equivalent.
- (4) Method 105 in Appendix B to this regulation is hereby approved by the Department as an alternative method for sources subject to 13.503(2).

13.113 Availability of Information

- (1) Emission data provided to, or otherwise obtained by, the Department in accordance with the provisions of this regulation shall be available to the public.
- (2) Any records, reports, or information, other than emission data, provided to, or otherwise obtained by, the Department in accordance with the provisions of this regulation shall be available to the public, except that upon a showing satisfactory to the Department by any person that such records, reports, or information, or particular part thereof (other than emission data), if made public, would divulge methods or processes entitled to protection as trade secrets of such person, the Department will consider such records, reports, or information, or particular part thereof, confidential in accordance with the purposes of Section 1905 of Title 18 of the United States Code, except that such records, reports, or information, or particular part thereof, may be disclosed to other officers, employees, or authorized representatives of the State and Federal Government concerned with carrying out the provisions of the Act or when relevant in any proceeding under the Act.

13.114 Circumvention

No owner or operator subject to the provisions of this regulation shall build, erect, install, or use any article, machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size.

13.200 EMISSION STANDARD FOR ASBESTOS

13.201 Applicability

The provisions of this section are applicable to those sources specified in 13.203.

13.202 Definitions

As used in this section, all terms not defined in this subsection shall have the meaning given them in the Act or in subsection 13.102.

- (1) "Asbestos" means actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite.
- (2) "Asbestos material" means asbestos or any material containing asbestos.
- (3) "Particulate asbestos material" means finely divided particles of asbestos material.
- (4) "Asbestos tailings" means any solid waste product of asbestos mining or milling operations which contains asbestos.
- (5) "Outside air" means the air outside buildings and structures.
- (6) "Visible emissions" means any emissions which are visually detectable without the aid of instruments and which contain particulate asbestos material.
- (7) "Asbestos mill" means any facility engaged in the conversion of asbestos ore into commercial asbestos. Outside storage of asbestos materials is not considered a part of such facility.
- (8) "Commercial asbestos" means any variety of asbestos which is produced by extracting asbestos from asbestos ore.
- (9) "Manufacturing" means the combining of commercial asbestos, or in the case of woven fraction products, the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product as specified in 13.203.
- (10) "Demolition" means the wrecking or taking out of any load-supporting structural member and any related removing or stripping of friable asbestos materials.
- (11) "Friable asbestos material" means any material that contains more than 1 percent asbestos by weight and that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure.
- (12) "Control device asbestos waste" means any asbestos-containing waste material that is collected in a pollution control device.

- (13) "Renovation" means the removing or stripping of friable asbestos material used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member. Operations in which load-supporting structural members are wrecked or taken out are excluded.
- (14) "Planned renovation" means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Operations that are individually non-scheduled are included, provided a number of such operations can be predicted to occur during a given period of time based on operating experience.
- (15) "Emergency renovation" means a renovation operation that results from a sudden, unexpected event, and is not a planned renovation. Operations necessitated by non-routine failures of equipment are included.
- (16) "Adequately wetted" means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.
- (17) "Removing" means taking out friable asbestos materials used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member from any building, structure, facility, or installation.
- (18) "Stripping" means taking off friable asbestos materials used for insulation or fireproofing from any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member.
- (19) "Fabricating" means any processing of a manufactured product containing commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of buildings, structures, facilities or installations.
- (20) "Inactive waste disposal site" means any disposal site or portion thereof where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.
- (21) "Active waste disposal site" means any disposal site other than an inactive site.
- (22) "Roadways" means surfaces on which motor vehicles travel including, but not limited to, highways, roads, streets, parking areas, and driveway.

- (23) "Asbestos-containing waste material" means any waste which contains commercial asbestos and is generated by a source subject to the provisions of this section, including asbestos mill tailings, control device asbestos waste, friable asbestos waste material, and bags or containers that previously contained commercial asbestos.
- (24) "Structural member" means any load-supporting member, such as beams and load-supporting walls; or any non-load-supporting member, such as ceilings and non-load-supporting walls.

13.203 Emission Standard

- (1) Asbestos mills: There shall be no visible emissions to the outside air from any asbestos mill except as provided in division (6) of this subsection.
- (2) Roadways: The surfacing of roadways with asbestos tailings or with asbestos-containing waste that is generated by any source subject to divisions (3), (4), (5) or (8) of this subsection is prohibited, except for temporary roadways on an area of asbestos ore deposits. The deposition of asbestos tailings or asbestos-containing waste on roadways covered with snow or ice is considered "surfacing."
- (3) Manufacturing: There shall be no visible emissions to the outside air, except as provided in division (6) of this subsection, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.
- (a) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.
 - (b) The manufacture of cement products.
 - (c) The manufacture of fireproofing and insulating materials.
 - (d) The manufacture of fraction products.
 - (e) The manufacture of paper, millboard, and felt.
 - (f) The manufacture of floor tile.
 - (g) The manufacture of paints, coatings, caulks, adhesives, sealants.
 - (h) The manufacture of plastics and rubber materials.
 - (i) The manufacture of chlorine.

(j) The manufacture of shotgun shells.

(k) The manufacture of asphalt concrete.

(4) Demolition and renovation: The requirements of this division shall apply to any owner or operator of a demolition or renovation operation who intends to demolish any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, installation, or portion thereof which contains any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that is insulated or fireproofed with friable asbestos material, except as provided in division (4)(a) of this subsection; or who intends to renovate any institutional, commercial, or industrial building, structure, facility, installation, or portion thereof where more than 80 meters (ca. 260 feet) of pipe insulated or fireproofed with friable asbestos material are stripped or removed, or more than 15 square meters (ca. 160 square feet) of friable asbestos material used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace, or structural member are stripped or removed.

(a) (i) The owner or operator of a demolition operation is exempted from the requirements of this division provided, (1) the amount of friable asbestos material in the building or portion thereof to be demolished is less than 80 meters (ca. 260 feet) used to insulate pipes, and less than 15 square meters (ca. 160 square feet) used to insulate or fireproof any duct, boiler, tank, reactor, turbine, furnace, or structural member, and (2) the notification requirements of division (4)(a)(ii) are met.

(ii) Written notification shall be postmarked or delivered to the Department at least 20 days prior to commencement of demolition and shall include the information required by division (4)(b) of this subsection, with the exception of the information required by divisions (4)(b)(iii), (vi), (vii), (viii), and (ix), and shall state the measured or estimated amount of friable asbestos material used for insulation and fireproofing which is present. Techniques of estimation shall be explained.

(b) Written notice of intention to demolish or renovate shall be provided to the Department by the owner or

operator of the demolition or renovation operation. Such notice shall be postmarked or delivered to the Department at least 10 days prior to commencement of demolition, or as early as possible prior to commencement of emergency demolition subject to division (4)(f) of this subsection, and as early as possible prior to commencement of renovation. Such notice shall include the following information:

- (i) Name of owner or operator.
 - (ii) Address of owner or operator.
 - (iii) Description of the building, structure, facility, or installation to be demolished or renovated, including the size, age, and prior use of the structure, and the approximate amount of friable asbestos material used for insulation and fireproofing.
 - (iv) Address or location of the building, structure, facility, or installation.
 - (v) Scheduled starting and completion dates of demolition or renovation.
 - (vi) Nature of planned demolition or renovation and method(s) to be employed.
 - (vii) Procedures to be employed to meet the requirements of this division and division (10) of this subsection.
 - (viii) The name and address or location of the waste disposal site where the friable asbestos waste will be deposited.
 - (ix) Name, title, and authority of the State or local government representative who has ordered a demolition which is subject to division (4)(f) of this subsection.
- (c) (i) For purposes of determining, whether a planned renovating operation constitutes a renovation within the meaning of this division, the amount of friable asbestos material to be removed or stripped shall be:
- ((a)) For planned renovating operations involving individually non-scheduled operations, the additive amount of friable asbestos material

that can be predicted will be removed or stripped at a source over the maximum period of time for which a prediction can be made. The period shall be not less than 30 days and not longer than one year.

- ((b)) For each planned renovating operation not covered by division (4)(c)(i)(a), the total amount of friable asbestos material that can be predicted will be removed or stripped at a source.
- (ii) For purposes of determining whether an emergency renovating operation constitutes a renovation within the meaning of this division, the amount of friable asbestos material to be removed or stripped shall be the total amount of friable asbestos material that will be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.
- (d) The following procedures shall be used to prevent emissions of particulate asbestos material to outside air:
 - (i) Friable asbestos materials, used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member, shall be removed from any building, structure, facility or installation subject to this division. Such removal shall occur before wrecking or dismantling of any portion of such building, structure, facility, or installation that would break up the friable asbestos materials and before wrecking or dismantling of any other portion of such building, structure, facility, or installation that would preclude access to such materials for subsequent removal. Removal of friable asbestos materials used for insulation or fireproofing of any pipe, duct, or structural member which are encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed during demolition.
 - (ii) Friable asbestos materials used to insulate or fireproof pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall be adequately wetted during stripping, except as provided in division (4)(d)(iv), (4)(d)(vi), or (4)(d)(vii) of this subsection.

- (iii) Pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members that are insulated or fireproofed with friable asbestos materials may be taken out of any building, structure, facility, or installation subject to this division as units or in sections provided the friable asbestos materials exposed during cutting or disjoints are adequately wetted during the cutting or disjoints operation. Such units shall not be dropped or thrown to the ground, but shall be carefully lowered to ground level.
- (iv) The stripping of friable asbestos materials used to insulate or fireproof any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member that has been removed as a unit or in sections as provided in division (4)(d)(iii) of this section shall be performed in accordance with division (4)(d)(ii) of this subsection. Rather than comply with the wetting requirement, a local exhaust ventilation and collection system may be used to prevent emissions to the outside air. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems except as provided in division (6) of this subsection.
- (v) All friable asbestos materials that have been removed or stripped shall be adequately wetted to ensure that such materials remain wet during all remaining stages of demolition or renovation and related handling operations. Such materials shall not be dropped or thrown to the ground or a lower floor. Such materials that have been removed or stripped more than 50 feet above ground level, except those materials removed as units or in sections, shall be transported to the ground via dust-tight chutes or containers.
- (vi) Except as specified below, the wetting requirements of this division are suspended when the temperature at the point of wetting is below 0°C (32°F). When friable asbestos materials are not wetted due to freezing temperatures, such materials on pipes, ducts, boilers, tanks, reactors, turbines, furnaces, or structural members shall, to the maximum extent possible, be removed as units or in sections prior to

wrecking. In no case shall the requirements of division (4)(d)(iv) or (4)(d)(v) be suspended due to freezing temperatures.

- (vii) For renovation operations, local exhaust ventilation and collection systems may be used, instead of wetting as specified in division (4)(d)(ii), to prevent emissions of particulate asbestos material to outside air when damage to equipment resulting from the wetting would be unavoidable. Upon request and supply of adequate information, the Department will determine whether damage to equipment resulting from wetting to comply with the provisions of this division would be unavoidable. Such local exhaust ventilation systems shall be designed and operated to capture the asbestos particulate matter produced by the stripping and removal of friable asbestos material. There shall be no visible emissions to the outside air from such local exhaust ventilation and collection systems, except as provided in division (6) of this subsection.
- (e) Sources subject to this division are exempt from the requirements of subsections 13.104(1), 13.106, and 13.107.
- (f) The demolition of a building, structure, facility, or installation, pursuant to an order of an authorized representative of a State or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse is exempt from all but the following requirements of division (4) of this subsection:
 - (i) The notification requirements specified by division (4)(b) of this subsection;
 - (ii) The requirements on stripping of friable asbestos materials from previously removed units or sections as specified in division (4)(d)(iv) of this subsection;
 - (iii) The wetting, as specified by division (4)(d)(v) of this subsection, of friable asbestos materials that have been removed or stripped;
 - (iv) The portion of the structure being demolished that contains friable asbestos materials shall be adequately wetted during the wrecking operation.

- (5) Spraying: There shall be no visible emissions to the outside air from the spray-on application of materials containing more than 1 percent asbestos, on a dry weight basis, used to insulate or fireproof equipment and machinery, except as provided in division (6) of this subsection. Spray-on materials used to insulate or fireproof buildings, structures, pipes, and conduits shall contain less than 1 percent asbestos on a dry weight basis.
- (a) Sources subject to this division are exempt from the requirements of 13.104(1), 13.106 and 13.107.
- (b) Any owner or operator who intends to spray asbestos materials which contain more than 1 percent asbestos on a dry weight basis to insulate or fireproof equipment and machinery shall report such intention to the Department at least 20 days prior to the commencement of the spraying operation. Such report shall include the following information:
- (i) Name of owner or operator.
- (ii) Address of owner or operator.
- (iii) Location of spraying operation.
- (iv) Procedures to be followed to meet the requirements of this division.
- (6) Rather than meet the no-visible-emission requirements as specified by divisions (1), (3), (4), (5), (8), (10) and (11) of this subsection, an owner or operator may elect to use the methods specified by subsection 13.204 to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air.
- (7) Where the presence of uncombined water is the sole reason for failure to meet the no-visible-emission requirement of divisions (1), (3), (4), (5), (8), (10) or (11) of this subsection, such failure shall not be a violation of such emission requirements.
- (8) Fabricating: There shall be no visible emissions to the outside air, except as provided in division (6) of this subsection, from any of the following operations if they use commercial asbestos or from any building or structure in which such operations are conducted.

- (a) The fabrication of cement building products.
 - (b) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.
 - (c) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture; bulkheads, partitions and ceilings for marine construction; and flow control devices for the molten metal industry.
- (9) Insulating: Molded insulating materials which are friable and wet-applied insulating materials which are friable after drying, installed after the effective date of these regulations, shall contain no commercial asbestos. The provisions of this division do not apply to insulating materials which are spray applied; such materials are regulated under subsection 13.203(5).
- (10) Waste disposal for manufacturing, fabricating, demolition, renovation and spraying operations: The owner or operator of any source covered under the provisions of divisions (3), (4), (5), or (8) of this subsection shall meet the following standards:
- (a) There shall be no visible emissions to the outside air, except as provided in division (10)(c) of this subsection, during the collection; processing, including incineration; packaging; transporting; or deposition of any asbestos-containing waste material which is generated by such source.
 - (b) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of subsection 13.206.
 - (c) Rather than meet the requirement of division (10)(a) of this subsection, an owner or operator may elect to use either of the disposal methods specified under (10)(c)(i) and (ii) of this subsection, or an alternative disposal method which has received prior approval by the Department:
 - (i) Treatment of asbestos-containing waste material with water:
 - ((a)) Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material

shall be adequately wetted. There shall be no visible emissions to the outside air from the collection, mixing and wetting operation except as provided in division (6) of this subsection.

((b)) After wetting, all asbestos-containing waste material shall be sealed into leak-tight containers while wet, and such containers shall be deposited at waste disposal sites which are operated in accordance with the provisions of subsection 13.206.

((c)) The containers specified under division (10)(c)(i)((b)) of this subsection shall be labeled with a warning label that states:

CAUTION

Contains Asbestos
Avoid Opening or Breaking Container
Breathing Asbestos is Hazardous
to Your Health

Alternatively, warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.93a-(g)(2)(ii) may be used.

(ii) Processing of asbestos-containing waste material into non-friable forms:

((a)) All asbestos-containing waste material shall be formed into non-friable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with the provisions of subsection 13.206.

((b)) There shall be no visible emissions to the outside air from the collection and processing of asbestos-containing waste material except as specified in division (6) of this subsection.

(d) For the purposes of this division (10), the term all asbestos-containing waste material as applied to demolition and renovation operations covered by

division (4) of this subsection includes only friable asbestos waste and control device asbestos waste.

- (11) Waste disposal for asbestos mills: The owner or operator of any source covered under the provisions of division (1) of this subsection shall meet the following standard:
- (a) There shall be no visible emissions to the outside air, except as provided in division (11)(c) of this subsection, during the collection, processing, packaging, transporting or deposition of any asbestos-containing waste material which is generated by such source.
 - (b) All asbestos-containing waste material shall be deposited at waste disposal sites which are operated in accordance with the provisions of subsection 13.206.
 - (c) Rather than meet the requirement of division (11)(a) of this subsection, an owner or operator may elect to meet the following requirements in division (11)(c)(i) and (ii), or use an alternative disposal method which has received prior approval by the Department:
 - (i) There shall be no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, except as provided in division (6) of this subsection. Such waste shall be subsequently processed either as specified in division (11)(c)(ii) of this subsection or as specified in division (10)(c) of this subsection.
 - (ii) All asbestos-containing waste material shall be adequately mixed, with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, prior to deposition at a waste disposal site. Such agent shall be used as recommended for the particular dust by the manufacturer of the agent. There shall be no discharge of visible emissions to the outside air from the wetting operation except as specified in division (6) of this subsection. Wetting may be suspended when the ambient temperature at the waste disposal site is less than -9.5°C (ca. 15°F). The ambient air temperature shall be determined by an appropriate measure-

ment method with an accuracy of 41°C(+2°F) and recorded at least at hourly intervals during the period that the operation of the wetting system is suspended. Records of such temperature measurements shall be retained at the source for a minimum of two years and made available for inspection by the Department.

- (12) The owner of any inactive waste disposal site, which was operated by sources covered under subsection 13.203(1), (3), or (8) and where asbestos-containing waste material produced by such sources was deposited, shall meet the following standards:
- (a) There shall be no visible emissions to the outside air from an inactive waste disposal site subject to this division, except as provided in division (12)(e) of this subsection.
- (b) Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 m (ca. 330 ft.) or less, except as specified in division (12)(d) of this subsection. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this division shall conform to the requirements of 20" x 14" upright format signs specified in 29 CFR 1910.145-(d)(4) and this division. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this division.

LEGEND

ASBESTOS WASTE DISPOSAL SITE

Do Not Create Dust

Breathing Asbestos is Hazardous
to Your Health

Notation

1" Sans Serif, Gothic or Block

3/4" Sans Serif, Gothic or Block

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

- (c) The perimeter of the site shall be fenced in a manner, adequate to deter access by the general public, except as specified in division (12)(d) of this subsection.
- (d) Warning signs and fencing are not required where the requirements of divisions (12)(e)(i) or (ii) of this subsection are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the Department will determine whether a fence or a natural barrier adequately deters access to the general public.
- (e) Rather than meet the requirement of division (12)(a) of this subsection, an owner may elect to meet the requirements of this subsection or may use all alternative control method for emissions from inactive waste disposal sites which has received prior approval by the Department.
 - (i) The asbestos-containing waste material shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material, and a cover of vegetation shall be grown and maintained on the area adequate to prevent exposure of the asbestos-containing waste material; or
 - (ii) The asbestos-containing waste material shall be covered with at least 60 centimeters (ca. 2 feet) of compacted non-asbestos-containing material and maintained to prevent exposure of the asbestos-containing waste; or
 - (iii) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Department. For purposes of this division, waste crankcase oil is not considered a dust suppression agent.

13.204 Air-Cleaning

If air-cleaning is elected, as permitted by 13.203(6) and 13.203(4)(d)(iv), the requirements of this subsection must be met.

- (1) Fabric filter collection devices must be used, except as noted in divisions (2) and (3) of this subsection. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability, as determined by ASTM Method D737-69, must not exceed 30 $\text{ft}^3/\text{min}/\text{ft}^2$ for woven fabrics or 35 $\text{ft}^3/\text{min}/\text{ft}^2$ for felted fabrics, except that 40 $\text{ft}^3/\text{min}/\text{ft}^2$ for woven and 45 $\text{ft}^3/\text{min}/\text{ft}^2$ for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least one-sixteenth inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.
- (2) If the use of fabric filters creates a fire or explosion hazard, the Department may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water gage pressure.
- (3) The Department may authorize the use of filtering equipment other than that described in divisions (1) and (2) of this subsection if the owner or operator demonstrates to the satisfaction of the Department that the filtering of particulate asbestos material is equivalent to that of the described equipment.
- (4) All air-cleaning equipment authorized by this subsection must be properly installed, used, operated, and maintained. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

13.205 Reporting

The owner or operator of any existing source to which this section is applicable shall, within 90 days after the effective date, provide the following information to the Department.

- (1) A description of the emission control equipment used for each process;
- (2) If the fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage.

- (a) If the fabric filter device utilizes a woven fabric the airflow permeability in $\text{ft}^3/\text{min}/\text{ft}^2$; and, if the fabric is synthetic, indicate whether the fill yarn is spun or not spun.
 - (b) If the fabric filter device utilizes a felted fabric, the density in oz/yd^2 , the minimum thickness in inches, and the airflow permeability in $\text{ft}^3/\text{min}/\text{ft}^2$.
- (3) For sources subject to subsections 13.203(10) and 13.203(11):
- (a) A brief description of each process that generates asbestos-containing waste material.
 - (b) The average weight of asbestos-containing waste material disposed of, measured in kg/day .
 - (c) The emission control methods used in all stages of waste disposal.
 - (d) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.
- (4) For sources subject to subsection 13.203(12):
- (a) A brief description of the site.
 - (b) The method or methods used to comply with the standard, or alternative procedures to be used.
- (5) Such information shall accompany the information required by subsection 13.108. The information described in this subsection shall be reported using the format of Appendix A of this regulation.

13.206 Waste Disposal Sites

In order to be an acceptable site for disposal of asbestos-containing waste material under subsection 13.203(10) and (11), an active waste disposal site shall meet the requirements of this subsection.

- (1) There shall be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, except as provided in division (5) of this subsection.

- (2) Warning signs shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited, at intervals of 100 m (ca. 330 ft) or less except as specified in division (4) of this subsection. Signs shall be posted in such a manner and location that a person may easily read the legend. The warning signs required by this division shall conform to the requirements of 20" x 14" upright format signs specified in 29CFR 1910.145(d)(4) and this division. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to those specified in this division.

LEGEND

ASBESTOS WASTE DISPOSAL SITE

Do Not Create Dust

Breathing Asbestos
is Hazardous to Your Health

Notation

1" Sans Serif, Gothic or Block

3/4" Sans Serif, Gothic or Block

14 Point Gothic

Spacing between lines shall be at least equal to the height of the upper of the two lines.

- (3) The perimeter of the disposal site shall be fenced in order to adequately deter access to the general public except as specified in division (4) of this subsection.
- (4) Warning signs and fencing are not required where the requirements of division (5)(a) of this subsection are met, or where a natural barrier adequately deters access to the general public. Upon request and supply of appropriate information, the Department will determine whether a fence or a natural barrier adequately deters access to the general public.
- (5) Rather than meet the requirements of division (1) of this subsection, an owner or operator may elect to meet the requirements of division (5)(a) or (5)(b) of this sub-

section, or may use an alternative control method for emissions from active waste disposal sites which has received prior approval by the Department.

- (a) At the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 centimeters (ca. 6 inches) of compacted non-asbestos-containing material.
- (b) At the end of each operating day, or at least once every 24-hour period while the disposal site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion. Such agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the Department. For purposes of this division, waste crankcase oil is not considered a dust suppression agent.

13.300 EMISSION STANDARD FOR BERYLLIUM

13.301 Applicability

The provisions of this section are applicable to the following stationary sources:

- (1) Extraction plants, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.
- (2) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

13.302 Definitions

As used in this section, all terms not defined in this subsection shall have the meaning given to them in the Act or in subsection 13.102.

- (1) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.
- (2) "Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.
- (3) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.
- (4) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.
- (5) "Ceramic plant" means a manufacturing plant producing ceramic items.
- (6) "Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.
- (7) "Beryllium-containing waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this section.
- (8) "Incinerator" means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.
- (9) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.
- (10) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.
- (11) "Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

13.303 Emission Standard

- (1) Emissions to the atmosphere from stationary sources

subject to the provisions of this section shall not exceed 10 grams of beryllium over a 24-hour period, except as provided in division (2) of this subsection,

- (2) Rather than meet the requirement of division (1) of this subsection, an owner or operator may request approval from the Department to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 ug/m^3 , averaged over a 30-day period.
 - (a) Approval of such requests may be granted by the Department provided that:
 - (i) At least 3 years of data is available which in the judgment of the Department demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 ug/m^3 , averaged over a 30-day period. Such 3-year period shall be the 3 years ending 30 days before the effective date of this standard.
 - (ii) The owner or operator requests such approval in writing within 30 days after the effective date of this standard.
 - (iii) The owner or operator submits a report to the Department within 45 days after the effective date of this standard which report includes the following information:
 - ((a)) Description of sampling method including the method and frequency of calibration.
 - ((b)) Method of sample analysis.
 - ((c)) Averaging technique for determining 30-day average concentrations.
 - ((d)) Number, identity, and location (address, coordinates, or distance and heading from plant) of sampling sites.
 - ((e)) Ground elevations and height above ground of sampling inlets.
 - ((f)) Plant and sampling area plots showing emission points and sampling sites. Topographic features significantly affecting dispersion including plant building heights and locations shall be included.

- ((g)) Information necessary for estimating dispersion including stack height, inside diameter, exit gas temperature, exit velocity or flow rate, and beryllium concentration.
- ((h)) A description of data and procedures (methods or models) used to design the air sampling network (i.e., number and location of sampling sites).
- ((i)) Air sampling data indicating beryllium concentrations in the vicinity of the stationary source for the 3-year period specified in division (2)(a) of this subsection. This data shall be presented chronologically and include the beryllium concentration and location of each individual sample taken by the network and the corresponding 30-day average beryllium concentrations.

(b) Within 60 days after receiving such report, the Department will notify the owner or operator in writing whether approval is granted or denied. Prior to denying approval to comply with the provisions of division (2) of this subsection, the Department will consult with representatives of the stationary source for which the demonstration report was submitted.

- (3) The burning of beryllium and/or beryllium-containing waste, except propellants, is prohibited except in incinerators, emissions from which must comply with the standard.

13.304 Stack Sampling

- (1) Unless a waiver of emission testing is obtained under 13.111, each owner or operator required to comply with 13.303(1) shall test emissions from his source,
 - (a) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or
 - (b) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
- (2) The Department shall be notified at least 30 days prior to an emission test so that it may observe the test,

- (3) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in any 24-hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities, or other factors, the calculation of maximum 24-hour-period emissions will be based on that combination of factors which is likely to occur during the subject period and which result in the maximum emissions. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until a new emission level has been estimated by calculation and the results reported to the Department.
- (4) All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the Department by a registered letter dispatched before the close of the next business day following such determination.
- (5) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.

13.305 Air Sampling

- (1) Stationary sources subject to 13.303(2) shall locate air sampling sites in accordance with a plan approved by the Department. Such sites shall be located in such a manner as is calculated to detect maximum concentrations of beryllium in the ambient air.
- (2) All monitoring sites shall be operated continuously except for a reasonable time allowance for instrument maintenance and calibration, for changing filters, or for replacement of equipment needing major repair.
- (3) Filters shall be analyzed and concentrations calculated within 30 days after filters are collected. Records of concentrations at all sampling sites and other data needed to determine such concentrations shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.
- (4) Concentrations measured at all sampling sites shall be reported to the Department every 30 days by a registered letter.

- (5) The Department may at any time require changes in, or expansion of, the sampling network.

13.400 EMISSION STANDARD FOR BERYLLIUM ROCKET MOTOR FIRING

13.401 Applicability

The provisions of this section are applicable to rocket motor test sites.

13.402 Definitions

As used in this section, all terms not defined in this subsection shall have the meaning given to them in the Act or in subsection 13.102.

- (1) "Rocket motor test site" means any building, structure, facility, or installation where the static test firing of a beryllium rocket motor and/or the disposal of beryllium propellant is conducted.
- (2) "Beryllium propellant" means any propellant incorporating beryllium.

13.403 Emission Standard

- (1) Emissions to the atmosphere from rocket-motor test sites shall not cause time-weighted atmospheric concentrations of beryllium to exceed 75 microgram minutes per cubic meter of air within the limits of 10 to 60 minutes, accumulated during any 2 consecutive weeks, in any area in which an effect adverse to public health could occur.
- (2) If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed 2 grams per hour and a maximum of 10 grams per day.

13.404 Emission Testing - Rocket Firing or Propellant Disposal

- (1) Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such a manner that the effect of these emissions can be compared with the standard. Such sampling techniques shall be approved by the Department.
- (2) All samples shall be analyzed and results shall be calculated within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All results shall be reported to the

Department by a registered letter dispatched before the close of the next business day following determination of such results.

- (3) Records of air sampling test results and other data needed to determine integrated intermittent concentrations shall be retained at the source and made available for inspection by the Department, for a minimum of 2 years.
- (4) The Department shall be notified at least 30 days prior to an air sampling test, so that he may at his option observe the test.

13.405 Stack Sampling

- (1) Sources subject to 13.403(2) shall be continuously sampled, during release of combustion products from the tank, in such a manner that compliance with the standards can be determined. The provisions of 13.112 shall apply.
- (2) All samples shall be analyzed, and beryllium emissions shall be determined within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All determinations shall be reported to the Department by a registered letter dispatched before the close of the next business day following such determinations.
- (3) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.
- (4) The Department shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

13.500 EMISSION STANDARD FOR MERCURY

13.501 Applicability

The provisions of this section are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.

13.502 Definitions

As used in this section, all terms not defined in this sub-

section shall have the meaning given to them in the Act or in subsection 13.102.

- (1) "Mercury" means the element mercury, excluding any associated elements, and includes mercury in particulates, vapors, aerosols, and compounds.
- (2) "Mercury ore" means a mineral mined specifically for its mercury content.
- (3) "Mercury ore processing facility" means a facility processing mercury ore to obtain mercury.
- (4) "Condenser stack gases" mean the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.
- (5) "Mercury chlor-alkali cell" means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.
- (6) "Mercury chlor-alkali electrolyzer" means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.
- (7) "Denuder" means a horizontal or vertical container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.
- (8) "Hydrogen gas stream" means a hydrogen stream formed in the chlor-alkali cell denuder.
- (9) "End box" means a container(s) located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.
- (10) "End box ventilation system" means a ventilation system which collects mercury emissions from the end-boxes, the mercury sump pumps, and their water collection systems.
- (11) "Cell room" means a structure(s) housing one or more mercury electrolytic chlor-alkali cells.
- (12) "Sludge" means sludge produced by a treatment plant that processes municipal or industrial waste waters.

- (13) "Sludge dryer" means a device used to reduce the moisture content of sludge by heating to temperatures above 65°C (ca. 150°F) directly with combustion gases.

13.503 Emission Standard

- (1) Emission to the atmosphere from mercury ore processing facilities and mercury cell chlor-alkali plants shall not exceed 2,300 grams of mercury per 24-hour period.
- (2) Emissions to the atmosphere from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges shall not exceed 3,200 grams of mercury per 24-hour period.

13.504 Stack Sampling

- (1) Mercury ore processing facility.
 - (a) Unless a waiver of emission testing is obtained under 13.111, each owner or operator processing mercury ore shall test emissions from his source.
 - (i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or
 - (ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
 - (b) The Department shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.
 - (c) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the Department.
 - (d) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. Each determination will be reported to the Department by a registered letter dispatched before the close of the next business day following such determination.

- (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.
- (2) Mercury chlor-alkali plant-hydrogen and end-box ventilation gas streams.
- (a) Unless a waiver of emission testing is obtained under 13.111, each owner or operator employing mercury chlor-alkali cell(s) shall test emissions from his source.
 - (i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or
 - (ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
 - (b) The Department shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.
 - (c) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission has been estimated by calculation and the results reported to the Department.
 - (d) All samples shall be analyzed and mercury emissions shall be determined within 30 days after the source test. All the determinations will be reported to the Department by a registered letter dispatched before the close of the next business day following such determination.
 - (e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.
- (3) Mercury chlor-alkali plants - cell room ventilation system.

- (a) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with division (3)(b) of this subsection or demonstrate compliance with division (3)(d) of this subsection and assume ventilation emissions of 1,300 gms/day of mercury.
 - (b) Unless a waiver of emission testing is obtained under 13.111, each owner or operator shall pass all cell room air in forced gas streams through stacks suitable for testing.
 - (i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or
 - (ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
 - (c) The Department shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.
 - (d) An owner or operator may carry out approved design, maintenance, and housekeeping practices. A list of approved design, maintenance, and housekeeping practices may be obtained from the Department.
- (4) Sludge incineration and drying plants.
- (a) Unless a waiver of emission testing is obtained under subsection 13.111, each owner or operator of a source subject to the standard in subsection 13.503(2) shall test emissions from that source. Such tests shall be conducted in accordance with the procedures set forth either in division (4) of this subsection or in subsection 13.505.
 - (b) Method 101 in Appendix B to this part shall be used to test emissions as follows:
 - (i) The test shall be performed within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date.

- (ii) The test shall be performed within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
- (c) The Department shall be notified at least 30 days prior to an emission test, so that it may at its option observe the test.
- (d) Samples shall be taken over such a period or periods as are necessary to determine accurately the maximum emissions which will occur in a 24-hour period. No changes shall be made in the operation which would potentially increase emissions above the level determined by the most recent stack test, until the new emissions level has been estimated by calculation and the results reported to the Department.
- (e) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Department by a registered letter dispatched before the close of the next business day following such determination.
- (f) Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available, for inspection by the Department, for a minimum of 2 years.

13.505 Sludge Sampling

- (1) As an alternative means for demonstrating compliance with subsection 13.503(2), an owner or operator may use Method 105 of Appendix B and the procedures specified in this subsection.
 - (a) A sludge test shall be conducted within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date; or
 - (b) A sludge test shall be conducted within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.
- (2) The Department shall be notified at least 30 days prior to a sludge sampling test, so that it may at its option observe the test.

(3) Sludge shall be sampled according to division (3)(a) of this subsection, sludge charging rate for the plant shall be determined according to division (3)(b) of this subsection, and the sludge analysis shall be performed according to division (3)(c) of this subsection.

(a) The sludge shall be sampled after de-watering and before incineration or drying, at a location that provides a representative sample of the sludge that is charged to the incinerator or dryer. Eight consecutive grab samples shall be obtained at intervals of between 45 and 60 minutes and thoroughly mixed into one sample. Each of the eight grab samples shall have a volume of at least 200 ml but not more than 400 ml. A total of three composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period shall not exceed 72 hours after the first grab sample is obtained. Samples shall not be exposed to any condition that may result in mercury contamination or loss.

(b) The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of sludge charged to the incinerator or dryer with an accuracy of +5 percent over its operating range. Other methods of measuring sludge mass charging rates may be used if they have received prior approval by the Department.

(c) The handling, preparation, and analysis of sludge samples shall be accomplished according to Method 105 in Appendix B of this part.

(4) The mercury emissions shall be determined by use of the following equation:

$$E_{\text{Hg}} = 1 \times 10^{-3} cQ$$

where:

E_{Hg} = Mercury emissions, g/day.

c = Mercury concentration of sludge on a dry solids basis, ug/g (ppm).

Q = Sludge charging rate, kg/day.

- (5) No changes in the operation of a plant shall be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test, until the new emission level has been estimated by calculation and the results reported to the Department.
- (6) All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the Department by a registered letter dispatched before the close of the next business day following such determination.
- (7) Records of sludge sampling, charging rate determination and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available, for inspection by the Department, for a minimum of 2 years.

13.506 Emission Monitoring

- (1) Wastewater treatment plant sludge incineration and drying plants. All such sources for which mercury emissions exceed 1600 g/day, demonstrated either by stack sampling according to subsection 13.504 or sludge sampling according to subsection 13.505, shall monitor mercury emissions at intervals of at least once per year by use of Method 105 of Appendix B, or the procedures specified in subsection 13.505(3) and (4). The results of monitoring shall be reported and retained according to subsection 13.504(4)(e) and (f), or subsection 13.505(6) and (7).

13.600 National Emission Standard for Vinyl Chloride

(1) Applicability

- (a) This subsection applies to plants which produce:
 - (i) Ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene,
 - (ii) Vinyl chloride by any process, and/or
 - (iii) One or more polymers containing any fraction of polymerized vinyl chloride.
- (b) This subsection does not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of no more than 0.19 m³ (50 gal).
- (c) Divisions of this subsection other than 13.600(5) (a) (i), (b), (c), and (d) do not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of greater than 0.19 m³ (50 gal) and no more than 4.07 m³ (1100 gal).

(2) Definitions

Terms used in this subsection are defined in the Act, in subsection 12.102, or in this division as follows:

- (a) "Ethylene dichloride plant" includes any plant which produces ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.
- (b) "Vinyl chloride plant" includes any plant which produces vinyl chloride by any process.
- (c) "Polyvinyl chloride plant" includes any plant where vinyl chloride alone or in combination with other materials is polymerized.
- (d) "Slip gauge" means a gauge which has a probe that moves through the gas/liquid interface in a storage or transfer vessel and indicates the level of vinyl chloride in the vessel by the physical state of the material the gauge discharges.
- (e) "Type of resin" means the broad classification of resin referring to the basic manufacturing process for producing that resin, including, but not limited to, the suspension, dispersion, latex, bulk, and solution processes.
- (f) "Grade of resin" means the subdivision of resin classifica-

tion which describes it as a unique resin, i.e., the most exact description of resin with no further subdivision.

- (g) "Dispersion resin" means a resin manufactured in such a way as to form fluid dispersions when dispersed in a plasticizer or plasticizer/diluent mixtures.
- (h) "Latex resin" means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried.
- (i) "Bulk resin" means a resin which is produced by a polymerization process in which no water is used.
- (j) "Inprocess wastewater" means any water which, during manufacturing or processing, comes into direct contact with vinyl chloride or polyvinyl chloride or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product containing vinyl chloride or polyvinyl chloride but which has not been discharged to a wastewater treatment process or discharged untreated as wastewater.
- (k) "Wastewater treatment process" includes any process which modifies characteristics such as BOD, COD, TSS, and pH, usually for the purpose of meeting effluent guidelines and standards; it does not include any process the purpose of which is to remove vinyl chloride from water to meet requirements of this subsection.
- (l) "In vinyl chloride service" means that a piece of equipment contains or contacts either a liquid that is at least 10 percent by weight vinyl chloride or a gas that is at least 10 percent by volume vinyl chloride.
- (m) "Standard operating procedure" means a formal written procedure officially adopted by the plant owner or operator and available on a routine basis to those persons responsible for carrying out the procedure.
- (n) "Run" means the net period of time during which an emission sample is collected.
- (o) "Ethylene dichloride purification" includes any part of the process of ethylene dichloride production which follows ethylene dichloride formation and in which finished ethylene dichloride is produced.
- (p) "Vinyl chloride purification" includes any part of the process of vinyl chloride production which follows vinyl chloride formation and in which finished vinyl chloride is produced.
- (q) "Reactor" includes any vessel in which vinyl chloride is

partially or totally polymerized into polyvinyl chloride.

- (r) "Reactor opening loss" means the emissions of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than an emergency relief discharge as defined in 12.600 (6) (a).
- (s) "Stripper" includes any vessel in which residual vinyl chloride is removed from polyvinyl chloride resin, except bulk resin, in the slurry form by the use of heat and/or vacuum. In the case of bulk resin, stripper includes any vessel which is used to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.
- (t) "Standard temperature" means a temperature of 20 degrees C (69 degrees F).
- (u) "Standard pressure" means a pressure of 760 mm of Hg (29.92 in. of Hg).

(3) Emission Standard for Ethylene Dichloride Plants

Any owner or operator of an ethylene dichloride plant shall comply with the requirements of this division and 13.600 (6).

- (a) Ethylene dichloride purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in ethylene dichloride purification is not to exceed 10 ppm, except as provided in 13.600 (6) (a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in 13.600 (6) (b) (vi) ((a)) before being opened.
- (b) Oxychlorination reactor: Except as provided in 13.600 (6) (a), emissions of vinyl chloride to the atmosphere from each oxychlorination reactor are not to exceed 0.2 g/kg 0.0002 lb/lb) of the 100 percent ethylene dichloride product from the oxychlorination process.

(4) Emission Standard for Vinyl Chloride Plants

An owner or operator of a vinyl chloride plant shall comply with the requirements of this division and 13.600 (6).

- (a) Vinyl chloride formation and purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in vinyl chloride formation and/or purification is not to exceed 10 ppm, except as provided in 13.600 (6) (a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in 13.600 (6) (b) (vi) ((a)) before being opened.

(5) Emission Standard for Polyvinyl Chloride Plants

An owner or operator of a polyvinyl chloride plant shall comply with the requirements of this division and 13.600(6).

(a) Reactor: The following requirements apply to reactors:

- (i) The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each reactor is not to exceed 10 ppm, except as provided in paragraph (a) (ii) of this division and 13.600(6) (a).
 - (ii) The reactor opening loss from each reactor is not to exceed 0.02 g vinyl chloride/Kg (0.00002 lb vinyl chloride/lb) of polyvinyl chloride product, with the product determined on a dry solids basis. This requirement applies to any vessel which is used as a reactor or as both a reactor and a stripper. In the bulk process, the product means the gross product of prepolymerization and postpolymerization.
 - (iii) Manual vent valve discharge: Except for an emergency manual vent valve discharge, there is to be no discharge to the atmosphere from any manual vent valve on a polyvinyl chloride reactor in vinyl chloride service. An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any discharge to the atmosphere from any manual vent valve, the owner or operator of the source from which the discharge occurs shall submit to the Department a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.
- (b) Stripper: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each stripper is not to exceed 10 ppm, except as provided in 13.600(6) (a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in 13.600(6) (b) (vi) (a)) before being opened.
- (c) Mixing, weighing, and holding containers: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each mixing, weighing, or holding container in vinyl chloride service which precedes the stripper (or in the reactor if the plant has no stripper) in the plant process flow is not to exceed 10 ppm, except as provided in 13.600(6) (a). This requirement does not apply

to equipment that has been opened, is out of operation, and met the requirement in 13.600(6)(b)(vi)(a) before being opened.

- (d) Monomer recovery system. The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each monomer recovery system is not to exceed 10 ppm, except as provided in 13.600(6)(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in 13.600(6)(b)(vi)(a) before being opened.
- (e) Sources following the stripper(s): The following requirements apply to emissions of vinyl chloride to the atmosphere from the combination of all sources following the stripper(s) [or the reactor(s) if the plant has no stripper(s)] in the plant process flow including but not limited to, centrifuges, concentrators, blend tanks, filters, dryers, conveyor air discharges, baggers, storage containers, and inprocess wastewater:
 - (i) In polyvinyl chloride plants using stripping technology to control vinyl chloride emissions, the weighted average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day, measured immediately after the stripping operation is completed, may not exceed:
 - ((a)) 2000 ppm for polyvinyl chloride dispersion resins, excluding latex resins;
 - ((b)) 400 ppm for all other polyvinyl chloride resins, including latex resins, averaged separately for each type of resin; or
 - (ii) In polyvinyl chloride plants controlling vinyl chloride emissions with technology other than stripping or in addition to stripping, emissions of vinyl chloride to the atmosphere may not exceed:
 - ((a)) 2 g/kg (0.002 lb/lb) product from the stripper(s) [or reactor(s) if the plant has no stripper(s)] for dispersion polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis;
 - ((b)) 0.4 g/kg (0.0004 lb/lb) product from the stripper(s) [or reactor(s) if the plant has no stripper(s)] for all other polyvinyl chloride resins, including latex resins, with the product determined on a dry solids basis.

(6) Emission Standard for Ethylene Dichloride, Vinyl Chloride and

Polyvinyl Chloride Plants

An owner or operator of an ethylene dichloride, vinyl chloride, and/or polyvinyl chloride plant shall comply with the requirements of this division:

- (a) Relief valve discharge: Except for an emergency relief discharge, there is to be no discharge to the atmosphere from any relief valve on any equipment in vinyl chloride service. An emergency relief discharge means a discharge which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any relief valve discharge, the owner or operator of the source from which the relief valve discharge occurs shall submit to the Department a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.
- (b) Fugitive emission sources:
 - (i) Loading and unloading lines: Vinyl chloride emissions from loading and unloading lines in vinyl chloride service which are opened to the atmosphere after each loading or unloading operation are to be minimized as follows:
 - ((a)) After each loading or unloading operation and before opening a loading or unloading line to the atmosphere, the quantity of vinyl chloride in all parts of each loading or unloading line that are to be opened to the atmosphere is to be reduced so that the parts combined contain no greater than 0.0038 m^3 (0.13 ft^3) of vinyl chloride, at standard temperature and pressure; and
 - ((b)) Any vinyl chloride removed from a loading or unloading line in accordance with (b) (i) ((a)) of this division is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in 13.600 (7) .
 - (ii) Slip gauges: During loading or unloading operations, the vinyl chloride emissions from each slip gauge in vinyl chloride service are to be minimized by ducting any vinyl chloride discharged from the slip gauge through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in 13.600 (7) .

(iii) Leakage from pump, compressor, and agitator seals:

- ((a)) Rotating pumps: Vinyl chloride emissions from seals on all rotating pumps in vinyl chloride service are to be minimized by installing sealless pumps, pumps with double mechanical seals, or equivalent as provided in 13.600(7). If double mechanical seals are used, vinyl chloride emission from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600(7).
- ((b)) Reciprocating pumps: Vinyl chloride emissions from seals on all reciprocating pumps in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in 13.600(7). If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600(7).
- ((c)) Rotating compressors: Vinyl chloride emissions from seals on all rotating compressors in vinyl chloride service are to be minimized by installing compressors with double mechanical seals, or equivalent as provided in 13.600(7). If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the compressor; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600(7).
- ((d)) Reciprocating compressors: Vinyl chloride emissions from seals on all reciprocating compressors in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in 13.600(7). If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the compressor; by ducting any vinyl chloride between the two seals through a control system from

which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600(7).

- ((e)) Agitator: Vinyl chloride emissions from seals on all agitators in vinyl chloride service are to be minimized by installing agitators with double mechanical seals, or equivalent as provided in 13.600(7). If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the agitated vessel; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600(7).
- (iv) Leakage from relief valves: Vinyl chloride emissions due to leakage from each relief valve on equipment in vinyl chloride service are to be minimized by installing a rupture disk between the equipment and the relief valve, by connecting the relief valve discharge to a process line or recovery system, or equivalent as provided in 13.600(7).
- (v) Manual venting of gases: Except as provided in 13.600(5)(a)(iii), all gases which are manually vented from equipment in vinyl chloride service are to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in 13.600.
- (vi) Opening of equipment: Vinyl chloride emissions from opening of equipment (including loading or unloading lines that are not opened to the atmosphere after each loading or unloading operation) are to be minimized as follows:
 - ((a)) Before opening any equipment for any reason, the quantity of vinyl chloride is to be reduced so that the equipment contains no more than 2.0 percent by volume vinyl chloride or 0.0950 m**3 (25 gal) of vinyl chloride, whichever is larger, at standard temperature and pressure; and
 - ((b)) Any vinyl chloride removed from the equipment in accordance with (b)(vi)((a)) of this division is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in 13.600(7).
- (vii) Samples: Unused portions of samples containing at least

10 percent by weight vinyl chloride are to be returned to the process, and sampling techniques are to be such that sample containers in vinyl chloride service are purged into a closed process system.

(viii) Leak detection and elimination: Vinyl chloride emissions due to leaks from equipment in vinyl chloride service are to be minimized by instituting and implementing a formal leak detection and elimination program. The owner or operator shall submit a description of the program to the Department for approval. The program is to be submitted within 45 days of the effective date of these regulations.

- ((a)) It includes a reliable and accurate vinyl chloride monitoring system for detection of major leaks and identification of the general area of the plant where a leak is located. A vinyl chloride monitoring system means a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry flame ion detection, or an equivalent or alternative method.
- ((b)) It includes a reliable and accurate portable hydrocarbon detector to be used routinely to find small leaks and to pinpoint the major leaks indicated by the vinyl chloride monitoring system. A portable hydrocarbon detector means a device which measures hydrocarbons with a sensitivity of at least 10 ppm and is of such design and size that it can be used to measure emissions from localized points.
- ((c)) It provides for an acceptable calibration and maintenance schedule for the vinyl chloride monitoring system and portable hydrocarbon detector. For the vinyl chloride monitoring system, a daily span check is to be conducted with a concentration of vinyl chloride equal to the concentration defined as a leak according to (b) (iii) ((f)) of this division. The calibration is to be done with either:
 - (A) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or
 - (B) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by

the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than plus or minus 5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in section 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.

- ((d)) The location and number of points to be monitored and the frequency of monitoring provided for in the program are acceptable when they are compared with the number of pieces of equipment in vinyl chloride service and the size and physical layout of the plant.
 - ((e)) It contains an acceptable plan of action to be taken when a leak is detected.
 - ((f)) It contains a definition of leak which is acceptable when compared with the background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system. Measurements of background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system are to be included with the definition of leak for a given plant may vary among the different areas within the plant and is also to change over time as background concentrations in the plant are reduced.
- (ix) Inprocess wastewater: Vinyl chloride emissions to the atmosphere from inprocess wastewater are to be reduced as follows:
- ((a)) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 10 ppm vinyl chloride measured immediately as it leaves a piece of equipment and before being mixed with any other inprocess wastewater stream is to be reduced to no more than 10 ppm by weight before being mixed with any other inprocess wastewater stream which contains less than 10 ppm vinyl chloride; before being exposed to the atmosphere, before

being discharged to a wastewater treatment process; or before being discharged untreated as a wastewater. This paragraph does apply to water which is used to displace vinyl chloride from equipment before it is opened to the atmosphere in accordance with 13.600(5)(a)(ii) or paragraph (b)(vi) of this division, but does not apply to water which is used to wash out equipment after the equipment has already been opened to the atmosphere in accordance with 13.600(5)(a)(ii) or paragraph (b)(vi) of this division.

- ((b)) Any vinyl chloride removed from the inprocess wastewater in accordance with (b)(iii) of this division is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in 13.600(7).
- (x) The requirements in paragraphs (b)(i), (b)(ii), (b)(v), (b)(vi), (b)(vii), and (b)(viii) of this division are to be incorporated into a standard operating procedure, and made available upon request for inspection by the Department. The standard operating procedure is to include provisions for measuring the vinyl chloride in equipment greater than or equal to 4.75 m³ (1250 gal) in volume for which an emission limit is prescribed in 13.600(6)(b)(vi)((a)) prior to opening the equipment and using Test Method 106, a portable hydrocarbon detector, or an equivalent or alternative method. The method of measurement is to meet the requirements 13.600(8)(g)(v)((a)) (A) or (g)(v)((a)) (B).

(7) Equivalent Equipment and Procedures

Upon written application from an owner or operator, the Department may approve use of equipment or procedures which have been demonstrated to his satisfaction to be equivalent in terms of reducing vinyl chloride emissions to the atmosphere to those prescribed for compliance with a specific division of this subsection. For an existing source, any request for using an equivalent method as the initial measure of control is to be submitted to the Department within 30 days of the effective date. For a new source, any request for using an equivalent method is to be submitted to the Department with the application for approval of construction or modification by 13.106.

(8) Emission Tests

- (a) Unless a waiver of emission testing is obtained under 13.111, the owner or operator of a source to which this subsection applies shall test emissions from the source.
 - (i) Within 90 days of startup in the case of a new source,

initial startup of which occurs after the effective date.

- (b) The owner or operator shall provide the Department at least 30 days prior notice of an emission test to afford the Department the opportunity to have an observer present during the test.
 - (c) Any emission test is to be conducted while the equipment being tested is operating at the maximum production rate at which the equipment will be operated and under other relevant conditions as may be specified by the Department based on representative performance of the source.
 - (d) (Reserved)
 - (e) When at all possible, each sample is to be analyzed within 24 hours, but in no case in excess of 72 hours of sample collection. Vinyl chloride emissions are to be determined within 30 days after the emission test. The owner or operator shall report the determinations to the Department by a registered letter dispatched before the close of the next business day following the determination.
 - (f) The owner or operator shall retain at the plant and make available, upon request, for inspection by the Department, for a minimum of 2 years records of emission test results and other data needed to determine emissions.
 - (g) Unless otherwise specified, the owner or operator shall use Test Methods in Appendix B to this regulation for each test as required by paragraphs (g) (i), (g) (ii), (g) (iii), (g) (iv), and (g) (v) of this division unless an equivalent method or an alternative method has been approved by the Department. If the Department finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, it may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Department may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.
 - (i) Test Method 106 is to be used to determine the vinyl chloride emissions from any source for which an emission limit is prescribed in 13.600(3) (a) or (b), 13.600(4) (a), or 13.600(5) (a) (i), (b), (c), or (d), or from any control system to which reactor emissions are required to be ducted in 13.600(5) (a) (ii) or to which fugitive emissions are required to be ducted in 13.600(6) (b) (i) ((b)), (b) (ii), (b) (v), (b) (vi) ((b)), or (b) (ix) ((b)).
- ((a)) For each run, one sample is to be collected. The

sampling site is to be at least two stack or duct diameters downstream and one half diameter upstream from any flow disturbance such as a bend, expansion, contraction, or visible flame. For a rectangular cross section an equivalent diameter is to be determined from the following equation:

$$\text{equivalent diameter} = 2 \frac{(\text{length})(\text{width})}{\text{length} + \text{width}}$$

The sampling point in the duct is to be at the centroid of the cross section. The sample is to be extracted at a rate proportional to the gas velocity at the sampling point. The sample is to be taken over a minimum of one hour, and is to contain a minimum volume of 50 liters corrected to standard conditions.

- ((b)) Each emission test is to consist of three runs. For the purpose of determining emissions, the average of all runs is to apply. The average is to be computed on a time weighted basis.
- ((c)) For gas streams containing more than 10 percent oxygen the concentration of vinyl chloride as determined by Test Method 106 is to be corrected to 10 percent oxygen (dry basis) for determination of emissions by using the following equation:

$$Cb(\text{corrected}) = Cb \frac{10.9}{20.9 - \text{percent O}_2}$$

where:

$Cb(\text{corrected})$ = The concentration of vinyl chloride in the exhaust gases, corrected to 10 percent oxygen.

Cb = The concentration of vinyl chloride as measured by Test Method 106.

20.9 = Percent oxygen in the ambient air at standard conditions.

10.9 = Percent oxygen in the ambient air at standard conditions, minus the 10.0-percent oxygen to which the correction is being made.

Percent O_2 = Percent oxygen in the exhaust gas as measured by Reference Method 3 in Appendix A of R23-25-12.

- ((d)) For those emission sources where the emission limit is prescribed in terms of mass rather than concentration, mass emissions in kg/100 kg product are to be determined by using the following equation:

$$CBX = \frac{[Cb(2.06)Q 10^{-6}] 100}{Z}$$

where:

CBX = kg vinyl chloride/100 kg product.

Cb = The concentration of vinyl chloride as measured by Test Method 106.

2.06 = Density of vinyl chloride at one atmosphere and 20 degrees C in kg/m³.

Q = Volumetric flow rate in m³/hr as determined by Reference Method 2 of Appendix A to R23-25-12.

10⁻⁶ = Conversion factor for ppm.

Z = Production rate (kg/hr).

- (ii) Test Method 107 is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream for which an emission limit is prescribed in 13.600(6) (b) (ix) ((a)).
- (iii) Where a stripping operation is used to attain the emission limit in 13.600(5) (e), emissions are to be determined using Test Method 107 as follows:
- ((a)) The number of strippers and samples and the types and grades of resin to be sampled are to be determined by the Department for each individual plant at the time of the test based on the plant's operation.
- ((b)) Each sample is to be taken immediately following the stripping operation.
- ((c)) The corresponding quantity of material processed by each stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Department.
- ((d)) At the prior request of the Department the owner or operator shall provide duplicates of the samples required in (g) (iii) ((a)) of this division.

(iv) Where control technology other than or in addition to a stripping operation is used to attain the emission limit in 13.600 (5) (e), emissions are to be determined as follows:

- ((a)) Test Method 106 is to be used to determine atmospheric emissions from all of the process equipment simultaneously. The requirements of paragraph (g) (i) of this division are to be met.
- ((b)) Test Method 107 is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream subject to the emission limit prescribed in 13.600 (5) (e). The mass of vinyl chloride in kg/100 kg product in each inprocess wastewater stream is to be determined by using the following equation:

$$CBX = \frac{[CdR \ 10^{**}-6] [100]}{Z}$$

where:

CBX = kg vinyl chloride/100 kg product.

Cd = the concentration of vinyl chloride as measured by Test Method 107.

R = water flow rate in l/hr, determined in accordance with a method which has been submitted to and approved by the Department.

10**-6 = Conversion factor for ppm.

Z = Production rate (kg/hr), determined in accordance with a method which has been submitted and approved by the Department.

(v) The reactor opening loss for which an emission limit is prescribed in 13.600 (5) (a) (ii) is to be determined. The number of reactors for which the determination is to be made is to be specified by the Department for each individual plant at the time of the determination based on the plant's operation. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

((a)) Except as provided in (g) (v) ((b)) of this division, the reactor opening loss is to be determined using the following equation:

$$C = \frac{W(2.60) (10^{**}-6) (Cb)}{YZ}$$

where:

C = kg vinyl chloride emissions/kg product.

W = Capacity of the reactor in m³.

2.60 = Density of vinyl chloride at one atmosphere and 20 degrees C in kg/m³.

10⁻⁶ = Conversion factor for ppm.

Cb = ppm by volume vinyl chloride as determined by Test Method 106 or a portable hydrocarbon detector which measures hydrocarbons with a sensitivity of at least 10 ppm.

Y = Number of batches since the reactor was last opened to the atmosphere.

Z = Average kg of polyvinyl chloride produced per batch in the number of batches since the reactor was last opened to the atmosphere.

- (A) If Method 106 is used to determine the concentration of vinyl chloride (Cb), the sample is to be withdrawn at a constant rate with a probe of sufficient length to reach the vessel bottom from the manhole. Samples are to be taken for 5 minutes near the vessel center, and 5 minutes near the vessel top.
- (B) If a portable hydrocarbon detector is used to determine the concentration of vinyl chloride (Cb), a probe of sufficient length to reach the vessel bottom from the manhole is to be used to make the measurements. One measurement will be made within 6 inches of the vessel bottom, one near the vessel center and one near the vessel top. Measurements are to be made at each location until the reading is stabilized. All hydrocarbons measured are to be assumed to be vinyl chloride.
- (C) The production rate of polyvinyl chloride (Z) is to be determined by a method submitted to and approved by the Department.
- ((b)) A calculation based on the number of evacuations, the vacuum involved, and the volume of gas in the reactor is hereby approved by the Department or as an alternative method for

determining reactor opening loss for postpolymerization reactors in the manufacture of bulk resins.

(9) Emission Monitoring

- (a) A vinyl chloride monitoring system is to be used to monitor on a continuous basis the emissions from the sources for which emission limits are prescribed in 13.600(3)(a) and (b), 13.600(4)(a), and 13.600(5)(a)(i), (b), (c) and (d), and for any control system to which reactor emissions are required to be ducted in 13.600(5)(a)(ii) or to which fugitive emissions are required to be ducted in 13.600(6)(b)(i)((a)), and (b)(ii), (b)(v), (b)(vi)((b)), and (b)(ix)((b)).
- (b) The vinyl chloride monitoring system(s) used to meet the requirements in subdivision (a) of this division is to be a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method. The vinyl chloride monitoring system used to meet the requirements in 13.600(6)(b)(viii)((a)) may be used to meet the requirements of this division.
- (c) A daily span check is to be conducted for each vinyl chloride monitoring system used. For all of the emission sources listed in subdivision (a) of this division, except the one for which an emission limit is prescribed in 13.600(3)(b), the daily span check is to be conducted with a concentration of vinyl chloride equal to 10 ppm. For the emission source for which an emission limit is prescribed in 13.600(3)(b), the daily span check is to be conducted with a concentration of vinyl chloride which is determined to be equivalent to the emission limit for that source used on the emission test required by 13.600(8). The calibration is to be done with either:
with either:
 - (i) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or
 - (ii) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than plus or minus 5 percent from the certified value. The date of gas cylinder preparation,

certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in sections 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.

(10) Initial Report

(a) An owner or operator of any source to which this subsection applies shall submit a statement in writing notifying the Department that the equipment and procedural specifications in 13.600 (6) (b) (i), (b) (ii), (b) (iii), (b) (iv), (b) (v), (b) (vi), (b) (vii), and (b) (viii) are being implemented.

(i) In the case of a new source which did not have an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the initial startup date.

(b) The statement is to contain the following information:

(i) A list of the equipment installed for compliance,

(ii) A description of the physical and functional characteristics of each piece of equipment,

(iii) A description of the methods which have been incorporated into the standard operating procedures for measuring or calculating the emissions for which emission limits are prescribed in 13.600 (6) (b) (i) ((a)) and (b) (vi) ((a)),

(iv) A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

(11) Semiannual Report

(a) The owner or operator of any source to which this subsection applies shall submit to the Department on September 15 and March 15 of each year a report in writing containing the information required by this section. The first semiannual report is to be submitted following the first full 6 month reporting period after the initial report is submitted.

(b) In the case of a new source which did not have an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the initial startup date.

- (c) Unless otherwise specified, the owner or operator shall use the Test Methods in Appendix B to this regulation to conduct emission tests as required by paragraphs (c) (ii) and (c) (iii) of this division, unless an equivalent or an alternative method has been approved by the Department. If the Department finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, it may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Department may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.
- (i) The owner or operator shall include in the report a record of any emissions which averaged over any hour period (commencing on the hour) are in excess of the emission limits prescribed in 13.600(3) (a) or (b), 13.600(4) (a), or 13.600(5) (a) (i), (b), (c), or (d), or for any control system to which reactor emissions are required to be ducted in 13.600(5) (a) (ii) or to which fugitive emissions are required to be ducted in 13.600(6) (b) (i) ((b)), (b) (ii), (b) (v), (b) (vi) ((b)), or (b) (ix) ((b)). The emissions are to be measured in accordance with 13.600(9).
- (ii) In polyvinyl chloride plants for which a stripping operation is used to attain the emission level prescribed in 13.600(5) (e), the owner or operator shall include in the report a record of the vinyl chloride content in the polyvinyl chloride resin. Test Method 107 is to be used to determine vinyl chloride content as follows:
- ((a)) If batch stripping is used, one representative sample of polyvinyl chloride resin is to be taken from each batch of each grade of resin immediately following the completion of the stripping operation, and identified by resin type and grade and the date and time the batch is completed. The corresponding quantity of material processed in each stripper batch is to be recorded and identified by resin type and grade and the date and time the batch is completed.
- ((b)) If continuous stripping is used, one representative sample of polyvinyl chloride resin is to be taken for each grade of resin processed or at intervals of 8 hours for each grade of resin which is being processed, whichever is more frequent. The sample is to be taken as the resin flows out of the stripper and identified by resin type and grade and the date and time the sample was taken. The corresponding quantity of material processed by each

stripper over the time period represented by the sample during the eight hour period, is to be recorded and identified by resin type and grade and the date and time it represents.

- ((c)) The quantity of material processed by the stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Department.
- ((d)) At the prior request of the Department, the owner or operator shall provide duplicates of the samples required in (c) (ii) ((a)) and (c) (ii) ((b)) of this division.
- ((e)) The report to the Department by the owner or operator is to include the vinyl chloride content found in each sample required by (c) (ii) ((a)) and (c) (ii) ((b)) of this division; averaged separately for each type of resin, over each calendar day and weighted according to the quantity of each grade of resin processed by the stripper(s) that calendar day, according to the following equation:

$$AT(i) = [1/QT(i)] [PG(i) MG(i) + \dots + PG(n) MG(n)]$$

where:

A = 24 hour average concentration of type Ti resin in ppm (dry weight basis).

Q = Total production of type Ts resin over the 24-hour period, in kg.

Ti = Type of resin; i=1,2...m where m is total number of resin types produced during the 24-hour period.

M = Concentration of vinyl chloride in one sample of grade Gi resin, in ppm.

Gi = Grade of resin; e.g., G1, G2 and G3.

N = Total number of grades of resin produced during the 24-hour period.

- ((f)) The owner or operator shall retain at the source and make available for inspection by the Department for a minimum of 2 years records of all data needed to furnish the information required by (c) (ii) ((e)) of this division: The records are to contain the following information:

- (A) The vinyl chloride content found in all samples required in (c) (ii) ((a)) and (c) (ii) ((b)) of

this division identified by the resin type and grade and the time and date of the sample, and

(B) The corresponding quantity of polyvinyl chloride resin processed by the stripper(s), identified by the resin type and grade and the time and date it represents.

(iii) The owner or operator shall include in the report a record of the emissions from each reactor opening for which an emission limit is prescribed in 13.600(5)(a)(ii). Emissions are to be determined in accordance with 13.600(8)(g)(v), except that emissions for each reactor are to be determined. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(12) Recordkeeping

(a) The owner or operator of any source to which this subsection applies shall retain the following information at the source and make it available for inspection by the Department for a minimum of two years;

(i) A record of the leaks detected by the vinyl chloride monitoring system, and required by 13.600(6)(b)(viii), including the concentrations of vinyl chloride as measured, analyzed, and recorded by the vinyl chloride detector, the location of each measurement and the date and approximate time of each measurement.

(ii) A record of the leaks detected during routine monitoring with the portable hydrocarbon detector and the action taken to repair the leaks, as required by 13.600(6)(b)(viii), including a brief statement explaining the location and cause of each leak detected with the portable hydrocarbon detector, the date and time of the leak, and any action taken to eliminate that leak.

(iii) A record of emissions measured in accordance with 13.600(9).

(iv) A daily operating record for each polyvinyl chloride reactor, including pressures and temperatures.

APPENDIX

The appendix references, as specified within R23-25-13, are identical to those specified in Appendix A and Appendix B, as amended, of Title 40 Code of Federal Regulations, Part 61 (40 CFR 61). Adopted, by reference, are the following:

Appendix A - Compliance Status Information

Appendix B - Test Methods

- Method 101 - Reference Method for Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources (air streams)
- Method 102 - Reference Method for Determination of Particulate and Gaseous Mercury Emissions from Stationary Sources (hydrogen streams)
- Method 103 - Beryllium Screening Method
- Method 104 - Reference Method for Determination of Beryllium Emissions from Stationary Sources
- Method 105 - Method for Determination of Mercury in Wastewater Treatment Plant Sewage Sludges
- Method 106 - Determination of Vinyl Chloride from Stationary Sources. "NEW METHOD"
- Method 107 - Determination of Vinyl Chloride Content of In-process Wastewater Samples, and Vinyl Content of Polyvinyl Chloride Resin, Slurry, Wet Cake and Latex Samples. "NEW METHOD"

R23-25-14 DESIGNATED AIR CONTAMINANT SOURCES, PERMIT TO CONSTRUCT,
PERMIT TO OPERATE

14.100 DESIGNATED AIR CONTAMINANT SOURCES

14.110 Designated Source Categories

Pursuant to Subsection 1. of Section 23-25-04.1 of the North Dakota Century Code, stationary sources within the following source categories are designated as air contaminant sources capable of causing or contributing to air pollution, either directly or indirectly.

(1) The following chemical process facilities:

- (a) Adipic acid.
- (b) Ammonia.
- (c) Ammonium nitrate.
- (d) Carbon black.
- (e) Charcoal.
- (f) Chlorine.
- (g) Chlor-alkali manufacturing.
- (h) Detergent and soap.
- (i) Explosives (TNT and nitrocellulose).
- (j) Hydrochloric acid.
- (k) Hydrofluoric acid.
- (l) Nitric acid.
- (m) Paint and varnish manufacturing.
- (n) Phosphoric acid.
- (o) Phthalic anhydride.
- (p) Plastics manufacturing.
- (q) Printing ink manufacturing.
- (r) Sodium carbonate.

- (s) Sulfur production and recovery.
 - (t) Sulfuric acid.
 - (u) Synthetic fibers.
 - (v) Synthetic rubber.
 - (w) Terephthalic acid.
- (2) The following food and agricultural facilities:
- (a) Agricultural drying and dehydrating operations.
 - (b) Ammonium nitrate.
 - (c) Cheese whey drying and processing.
 - (d) Coffee roasting.
 - (e) Cotton ginning.
 - (f) Feed, grain and seed handling and processing.
 - (g) Fermentation processes.
 - (h) Fertilizers.
 - (i) Fish meal processing.
 - (j) Meat smoke houses.
 - (k) Orchard heaters.
 - (l) Potato processing.
 - (m) Rendering plants.
 - (n) Starch manufacturing.
 - (o) Sugarbeet processing.
- (3) The following metallurgical facilities:
- (a) Primary metals facilities:
 - (i) Aluminum ore reduction.
 - (ii) Copper smelters.
 - (iii) Ferroalloy production.

- (iv) Iron and steel mills.
- (v) Lead smelters.
- (vi) Metallurgical coke manufacturing.
- (vii) Zinc.

(b) Secondary metals facilities:

- (i) Aluminum operations.
- (ii) Brass and bronze smelting.
- (iii) Ferroalloys.
- (iv) Ferrous foundries.
- (v) Gray iron foundries.
- (vi) Lead smelting.
- (vii) Magnesium smelting.
- (viii) Non-ferrous foundries.
- (ix) Steel foundries.
- (x) Zinc processes.

(4) The following mineral products facilities:

- (a) Asphalt roofing.
- (b) Asphaltic concrete plants.
- (c) Bricks and related clay refractories.
- (d) Calcium carbide.
- (e) Ceramic and clay processes.
- (f) Clay and fly ash sintering.
- (g) Coal cleaning.
- (h) Coal drying.
- (i) Coal mining.
- (j) Coal handling and processing.

- (k) Concrete batching.
 - (l) Fiberglass manufacturing.
 - (m) Frit manufacturing.
 - (n) Glass manufacturing.
 - (o) Gypsum manufacturing.
 - (p) Leonardite mining, drying and processing.
 - (q) Lime manufacturing.
 - (r) Mineral wool manufacturing.
 - (s) Paperboard manufacturing.
 - (t) Perlite manufacturing.
 - (u) Phosphate rock preparation.
 - (v) Portland cement manufacturing, bulk handling and storage.
 - (w) Rock, stone, gravel, and sand quarrying and processing.
 - (x) Uranium mining, milling and enrichment.
- (5) The following energy and fuel facilities:
- (a) Coal gasification.
 - (b) Coal liquefaction.
 - (c) Crude oil and natural gas production.
 - (d) Fossil fuel steam electric plants.
 - (e) Fuel conversion plants.
 - (f) Natural gas processing.
 - (g) Petroleum refining and petrochemical operations.
 - (h) Petroleum storage (storage tanks and bulk terminals).
- (6) The following wood processing facilities:
- (a) Wood pulping.

- (b) Pulpboard manufacturing.
- (c) Plywood veneer and layout operations.
- (7) The following gaseous, liquid, and solid waste disposal facilities:
 - (a) Afterburners.
 - (b) Automobile body incinerators.
 - (c) Conical burners.
 - (d) Flares.
 - (e) Gaseous and liquid organic compounds incinerators.
 - (f) Industrial waste incinerators.
 - (g) Open burning.
 - (h) Open pit incinerators.
 - (i) Pathological waste incinerators.
 - (j) Refuse incinerators.
 - (k) Scrape metal salvage incinerators.
 - (l) Sewage sludge incinerators.
 - (m) Wood waste incinerators.
- (8) The following miscellaneous facilities:
 - (a) Dry cleaning and laundry operations.
 - (b) Fuel burning equipment.
 - (c) Internal combustion engines.
 - (d) Surface coating operations.
 - (e) Wastewater treatment plants (including lagoons).
 - (f) Water cooling towers and water cooling ponds.
- (9) Any category of sources to which a Federal standard of performance applies.

- (10) Any source which emits a contaminant subject to a national emission standard for hazardous air pollutants.
- (11) Any source which is subject to review under Federal significant deterioration of air quality regulations.
- (12) Any source which is determined by the Department to have an emission which effects State Ambient Air Quality Standards.

14.200 PERMIT TO CONSTRUCT

14.201 Permit to Construct Required

No construction, installation, or establishment of a new stationary source within a source category designated in subsection 14.110 of Section 14.100 of this regulation shall be commenced unless the owner or operator thereof shall file an application for, and receive, a permit to construct in accordance with this regulation. This requirement shall also apply to any source for which a federal standard of performance has been promulgated prior to such filing of an application for a Permit to Construct. A list of sources for which a federal standard has been promulgated, and the standards which apply to such sources, shall be available at the Department's offices.

14.202 Application for Permit to Construct

- (1) Application for a permit to construct a new installation or source shall be made by the owner or operator thereof on forms furnished by the Department.
- (2) A separate application is required for each new installation or source subject to this regulation.
- (3) Each application shall be signed by the applicant, which signature shall constitute an agreement that the applicant will assume responsibility for the construction, or operation of the new installation or source in accordance with these regulations and will notify the Department, in writing, of the start-up of operation of such source.

14.203 Alterations to Source

- (1) The addition to or enlargement of or replacement of or major alteration in any stationary source, already existing, which is undertaken pursuant to an approved compliance schedule for the reduction of emissions therefrom, shall be exempt from the requirements of this section.

(2) Any physical change in, or change in the method of operation of, a stationary source already existing which increases or may increase the emission rate of any pollutant for which an ambient air quality standard has been promulgated under these regulations or which results in the emission of any such pollutant not previously emitted shall be considered to be construction, installation, or establishment of a new source, except that:

(a) Routine maintenance, repair, and replacement shall not be considered a physical change, and

(b) The following shall not be considered a change in the method of operation:

(i) An increase in the production rate, if such increase does not exceed the operating design capacity of the source;

(ii) An increase in the hours of operation.

14.204 Submission of Plans - Deficiencies in Application

As part of an application for a permit to construct, the Department may require the submission of plans, specifications, siting information, emission information, descriptions and drawings showing the design of the installation or source, the manner in which it will be operated and controlled, the emissions expected from it, and the effects on ambient air quality. Any additional information, plans, specifications, evidence or documentation that the Department may require shall be furnished upon request. Within twenty (20) days of the receipt of the application, the Department shall advise the owner or operator of the proposed source of any deficiency, the date of receipt of the application shall be the date upon which all requested information is received.

14.205 Review of Application - Standard for Granting Permits to Construct

The Department shall review any plans, specifications, and other information submitted in application for a permit to construct and from such review shall, within thirty (30) days of the receipt of the completed application, make the following preliminary determinations:

(1) Whether the proposed project will be in accord with these regulations, including whether the operation of any new stationary source at the proposed location will result in any applicable ambient air quality standards being exceeded.

- (2) Whether the proposed project will provide all known available and reasonable methods of emission control. Whenever a standard of performance is applicable to the source, compliance with this criterion will require provision of emission control which will, at least, satisfy such standards.

14.206 Public Participation - Final Action on Application

This subsection shall apply only to those affected facilities designated under Chapters 33-15-12, 33-15-13 and 33-15-15 or for construction of other sources for which the actual emissions of any contaminant would be greater than fifty tons per year, one thousand pounds per day, or one hundred pounds per hour, whichever is most restrictive or for which the Department has determined to have a major impact on air quality or for which a request for a public comment period has been received from the public.

The Department shall:

- (1) Within thirty (30) days of the receipt of the completed application, make available in at least one location in the county or counties in which the proposed project is to be located, a copy of its preliminary determinations and copies of or a summary of the information considered in making such preliminary determinations.
- (2) Publish notice to the public by prominent advertisement, within thirty (30) days of the receipt of the completed application, in the region affected, of the opportunity for written comment on the preliminary determinations. Such public notice shall include the proposed location of the source.
- (3) Within thirty (30) days of the receipt of the completed application, deliver a copy of the notice to the applicant and to officials and agencies having cognizance over the locations where the source will be situated as follows: State and local air pollution control agencies, the chief executive of the city and county; any comprehensive regional land use planning agency; the Regional Administrator of the United States Environmental Protection Agency; and any State, Federal Land Manager or Indian Governing Body whose lands will be significantly affected by the source's emissions.

- (4) Allow thirty (30) days for public comment.
- (5) Consider all public comments properly received, in making the final decision on the application.
- (6) Allow the applicant to submit written responses to public comments received by the Department, within ten (10) days of the receipt of such comments.
- (7) Take final action on the application within thirty (30) days of the close of the public comment period.

14.207 Denial of Permit to Construct

If, after review of all information received, including public comment with respect to any proposed project, the Department makes the determination of any one of divisions (1) or (2) of subsection 14.205 of this section in the negative, it shall deny the permit and notify the applicant, in writing, of the denial to issue a permit to construct. If a permit to construct is denied, the construction, installation, or establishment of the new stationary source shall be unlawful. No permit to construct or modify shall be granted if such construction, or modification, or installation, will result in a violation of these regulations or in a violation of the Ambient Air Quality Standards.

14.208 Issuance of Permit to Construct

If, after review of all information received, including public comment with respect to any proposed project, the Department makes the determination of divisions (1) and (2) of subsection 14.205 of this section in the affirmative, the Department shall issue a permit to construct. Such permit may provide for conditions of operation as provided in subsection 14.209.

14.209 Permit to Construct - Conditions

The Department may impose any reasonable conditions upon a permit to construct, including conditions concerning:

- (1) Sampling, testing, and monitoring of the facilities or the ambient air or both;
- (2) Trial operation and performance testing;
- (3) Prevention and abatement of nuisance conditions caused by operation of the facility;
- (4) Record keeping and reporting; and
- (5) Compliance with applicable rules and regulations in accordance with a compliance schedule.

The violation of any conditions so imposed may result in revocation or suspension of the permit or other appropriate enforcement action.

14.210 Scope

- (1) The issuance of a permit to construct for any source shall not affect the responsibility of an owner or

operator to comply with applicable portions of a control strategy affecting that source.

- (2) A permit to construct shall become invalid if construction is not commenced within 18 months after receipt of such permit, if construction is discontinued for a period of 18 months or more; or if construction is not completed within a reasonable time. The Department may extend the 18 month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date. In cases of major construction projects involving long lead times and substantial financial commitments, the Department may provide by a condition to the permit a time period greater than 18 months when such time extension is supported by sufficient documentation by the applicant.

14.211 Permit to Construct Application Processing Fee

- (1) Any construction, installation, or establishment of a new stationary source requiring a permit to construct under Subsections 1 and 3 is required to pay a Permit to Construct application processing fee to the North Dakota State Department of Health as follows:
 - a. A filing fee of \$100.00 plus an application processing fee based on actual processing costs, including computer data processing costs, incurred by the Department for all sources subject to Chapters 33-15-12, 33-15-13, and 33-15-15 and other sources which involve a major analysis the cost of which would exceed \$100.00, as determined by the Department. The fee shall be paid on the following basis:
 1. The filing fee of \$100.00 shall be submitted with the permit application.
 2. A record of all Permit to Construct application processing costs incurred shall be maintained by the Department.
 3. Upon receipt of an application, the Department will inform the applicant of the probable total processing fee and the billing schedule that will be utilized in processing the application. If

the applicant chooses he may withdraw his application at this point without paying any processing fees.

4. Following the end of the public comment period and/or public hearing and after final determinations on the application have been made, a final statement will be sent to the applicant containing the remaining actual processing costs incurred by the Department.

- b. A filing fee of \$25.00 for all sources other than those sources designated in subdivision a. shall be submitted with the permit application.

14.300 PERMIT TO OPERATE

14.301 Permit to Operate Required

- (1) No person shall operate or cause the routine operation of a new installation or source designated in subsection 14.110 of section 14.100 of this regulation without applying for and obtaining, in accordance with this regulation, a permit to operate. Application for a permit to operate a new installation or source shall be made at least thirty (30) days prior to start-up of routine operation.
- (2) No person shall operate or cause the operation of an installation or source in violation of any permit to operate, any condition imposed upon a permit to operate or in violation of these regulations.

14.302 Application for Permit to Operate

- (1) Application for a permit to operate shall be made by the owner or operator thereof on forms furnished by the Department.
- (2) Each application for a permit to operate shall be accompanied by such performance tests results, information, and records as may be required by the Department to determine whether the requirements of these regulations will be met. Such information may also be required by the Department at any time when the source is being operated to determine compliance with these regulations.
- (3) Each application shall be signed by the applicant, which signature shall constitute an agreement that the applicant will assume responsibility for the operation of the installation or source in accordance with these regulations.

14.303 Standards for Granting Permits to Operate

No permit to operate shall be granted unless the applicant shows to the satisfaction of the Department that the source is in compliance with these regulations.

14.304 Performance Testing

Before a permit to operate is granted, the applicant, if required by the Department, shall conduct performance tests in accordance with methods and procedures required by these regulations or methods and procedures approved by the Department. Such tests shall be made at the expense of the applicant. The Department may monitor such tests and may also conduct performance tests.

14.305 Action on Applications

- (1) The Department shall act within thirty (30) days after receipt of an application for a permit to operate a new installation or source, and within thirty (30) days after receipt of an application to operate an existing installation or source, and shall notify the applicant, in writing, of the approval, conditional approval, or denial of the application.
- (2) The Department shall set forth in any notice of denial the reasons for denial. A denial shall be without prejudice to the applicant's right to a hearing before the Department or for filing a further application after revisions are made to meet objections specified as reasons for the denial.

14.306 Permit to Operate - Conditions

The Department may impose any reasonable conditions upon a permit to operate, including conditions concerning:

- (1) Sampling, testing and monitoring of the facilities or ambient air or both;
- (2) Trial operation and performance testing;
- (3) Prevention and abatement of nuisance conditions caused by operation of the facility;
- (4) Record keeping and reporting; and
- (5) Compliance with applicable rules and regulations in accordance with a compliance schedule.

14.307 Suspension or Revocation of Permit to Operate

- (1) The Department may suspend or revoke a permit to operate for violation of these regulations and any permit conditions.
- (2) Suspension or revocation of a permit to operate shall become final ten days after service of notice on the holder of the permit.
- (3) A permit to operate which has been revoked pursuant to these regulations shall be surrendered forthwith to the Department.
- (4) No person shall operate or cause the operation of an installation or source if the Department denies or revokes a permit to operate.

14.308 Transfer of Permit to Operate

The holder of a permit to operate may not transfer it without the prior approval of the Department.

14.309 Renewal of Permit to Operate

- (1) Every permit to operate issued by the Department after the effective date of this regulation shall become void upon the third anniversary of their issuance. Applications for renewal of such permits shall be submitted sixty (60) days prior to such anniversary date. The Department shall approve or disapprove such application within sixty (60) days.
- (2) The Department may amend permits issued prior to the effective date of this regulation so as to provide for avoidance upon the third anniversary of their issuance of such permit.

14.400 COMMON PROVISIONS APPLICABLE TO BOTH PERMIT TO CONSTRUCT AND PERMIT TO OPERATE

14.401 Exemptions

A permit to construct and a permit to operate shall not be required for the following stationary sources:

- (1) Maintenance, structural changes or minor repair of process equipment, fuel-burning equipment, control equipment, or incinerators which do not change capacity of such process equipment, fuel-burning equipment, con-

trol equipment, or incinerators and which do not involve any change in the quality, nature, or quantity, of emissions therefrom.

- (2) Fuel-burning equipment, other than smoke-house generators, which have a heat input of not more than 10 million BTUs per hour and burn only gaseous fuel containing not more than 2.5 grains H_2S per 100 standard cubic feet (5.7 g/100 stdm³); or have a heat input of not more than 10 million BTUs per hour and burn distillate oil as a fuel; or have a heat input of not more than 1 million BTUs per hour and burn residual oil as a fuel; or have a heat input of not more than 350,000 BTUs per hour and burn solid fuel.
- (3) Internal combustion engines with less than 500 brake horsepower.
- (4) Bench scale laboratory equipment used exclusively for chemical or physical analysis or experimentation.
- (5) Portable brazing, soldering, or welding equipment.
- (6) The following equipment:
 - (a) Comfort air conditioners or comfort ventilating systems which are not designed and not intended to be used to remove emissions generated by or released from specific units or equipment.
 - (b) Water cooling towers and water cooling ponds unless used for evaporative cooling of process water, or for evaporative cooling of water from barometric jets or barometric condensers or used in conjunction with an installation requiring a permit.
 - (c) Equipment used exclusively for steam cleaning.
 - (d) Grain, metal, plastic or mineral extrusion presses.
 - (e) Porcelain enameling furnaces or porcelain enameling drying ovens.
 - (f) Unheated solvent dispensing containers or unheated solvent rinsing containers of 60 gallons capacity or less.
 - (g) Equipment used for hydraulic or hydrostatic testing.

- (7) The following equipment or any exhaust system or collector serving exclusively such equipment:
- (a) Blast cleaning equipment using a suspension of abrasive in water.
 - (b) Bakery ovens where the products are edible and intended for human consumption.
 - (c) Kilns for firing ceramic ware, heated exclusively by gaseous fuels, singly or in combinations and electricity.
 - (d) Confection cookers where the products are edible and intended for human consumption.
 - (e) Drop hammers or hydraulic presses for forging or metal working.
 - (f) Die casting machines.
 - (g) Photographic process equipment through which an image is reproduced upon material through the use of sensitized radiant energy.
 - (h) Equipment for drilling, carving, cutting, routing, turning, sawing, planing, spindle sanding or disc sanding of wood or wood products, which is located within a facility that does not vent to the outside air.
 - (i) Equipment for surface preparation of metals by use of aqueous solutions, except for acid solutions.
 - (j) Equipment for washing or drying products fabricated from metal or glass; provided, that no volatile organic materials are used in the process and that no oil or solid fuel is burned.
 - (k) Laundry dryers, extractors or tumblers for fabrics cleaned with only water solutions of bleach or detergents.
 - (l) Containers, reservoirs, or tanks used exclusively for electrolytic plating with, or electrolytic polishing of, or electrolytic stripping of the following metals: brass, bronze, cadmium, copper, iron, lead, nickel, tin, zinc, precious metals.

- (8) Natural draft hoods or natural draft ventilators.
- (9) Containers, reservoirs or tanks used exclusively for:
 - (a) Dipping operations for coating objects with oils, waxes, or greases, where no organic solvents are used.
 - (b) Dipping operations for applying coatings of natural or synthetic resins which contain no organic solvents.
 - (c) Storage of butane, propane or liquefied petroleum or natural gas.
 - (d) Storage of lubricating oils.
 - (e) Storage of Nos. 1, 2, 4, 5 and 6 fuel oil, non-military jet engine fuel, and crude petroleum or condensate which is stored, processed, and/or treated at a drilling and production facility prior to custody transfer and does not contain dissolved hydrogen sulfide.
 - (f) Storage of volatile organic compounds in any stationary tank, reservoir, or other container of 40,000 gallons or less.
- (10) Gaseous fuel-fired or electrically-heated furnaces for heat treating glass or metals, the use of which does not involve molten materials.
- (11) Crucible furnaces, pot furnaces or induction furnaces, with a capacity of 1,000 pounds or less each, unless otherwise noted, in which no sweating or distilling is conducted, nor any fluxing conducted utilizing chloride, fluoride, or ammonium compounds, and from which only the following metals are held in a molten state:
 - (a) Aluminum or any alloy containing over 50 percent aluminum, provided that no gaseous chlorine compounds, chlorine, aluminum chloride or aluminum fluoride are used.
 - (b) Magnesium or any alloy containing over 50 percent magnesium.
 - (c) Lead or any alloy containing over 50 percent lead, in a furnace with a capacity of 550 pounds or less.
 - (d) Tin or any alloy containing over 50 percent tin.

- (e) Zinc or any alloy containing over 50 percent zinc.
- (f) Copper.
- (g) Precious metals.
- (12) Open burning activities within the scope of section 4,200 of regulation 23-25-04 of these regulations.
- (13) Flares used to indicate some danger to the public.
- (14) Other sources of minor significance as determined by the Department.

14.402 Performance and Emission Testing

- (1) Emission tests or performance tests or both shall be conducted by the owner or operator of a facility and data reduced in accordance with the applicable procedure, limitations, standards and test methods established by these regulations. Such tests shall be conducted under the owner's or operator's permit to construct or operate and such permit is subject to the faithful completion of the test in accordance with these regulations.
- (2) All dates and periods of trial operation for the purpose of performance or emission testing pursuant to a permit to construct, and all dates of performance or emission testing pursuant to a permit to operate, must be approved in advance by the Department. Trial operation shall cease if the Department determines, on the basis of the test results, that continued operation will result in the violation of these regulations. Upon completion of any test conducted under a permit to construct, the Department may order the cessation of the operation of the tested equipment or facility until such time as a permit to operate has been issued by the Department.
- (3) Upon review of the performance data resulting from any test, the Department may require the installation of such additional control equipment as will bring the facility into compliance with these regulations.
- (4) Nothing in these regulations shall be construed to prevent the Department from conducting any test upon its own initiative, or from requiring the owner or operator to conduct any test at such time as the Department may determine.

14.403 Responsibility to Comply

- (1) Possession of a permit to construct or a permit to operate shall not relieve any person of the responsibility to comply with these regulations.
- (2) The exemption of any stationary source from the requirements of a permit to construct or a permit to operate by reason of inclusion in subsection 14.401 shall not relieve the owner or operator of such source of the responsibility to comply with any other applicable portions of these regulations.

14.404 Portable Sources

Sources which are designed to be portable and which are operated at temporary jobsites across the State shall not be considered a new source by virtue of location changes. One application for a permit to operate any portable source shall be filed in accordance with Regulation 23-25-14 and subsequent applications are not required for each temporary jobsite. The permit to operate issued by the Department shall be conditioned by such specific requirements as the Department deems appropriate to carry out the provisions of section 1.050 and 1.140 of R23-25-01.

14.405 Registration of Exempted Stationary Sources

The Department may require that the owner or operator of any stationary source exempted under subsection 14.401 shall register the source with the Department within such time limits and on such forms as the Department may prescribe.

14.406 Extensions of Time

The Department may extend any of the time periods specified in subsections 14.204, 14.205, 14.206 and 14.305 upon notification of the applicant by the Department.

14.407 Amendment of Permits

The Department may, when the public interest requires, modify any condition of a permit to operate or permit to construct. Modification shall be made only upon the Department's own motion and the procedure shall, at a minimum, conform to any requirements of Federal and State law. In the event that the modification would have major impact or be of concern to the public, the Department will provide:

- (1) Reasonable notice to the public, in the area to be affected, of the opportunity for comment on the proposed modification at a public hearing as well as written public comment;
- (2) A minimum of a thirty (30) day period for written public comment with a public hearing during that thirty (30) day period; and
- (3) Consideration by the Department of all comments received in its order for modification.

The Department may require the submission of such maps, plans, specifications, emission information and compliance schedules as it deems necessary prior to the issuance of an order for modification. It is the intention of the Department that this subsection shall apply only in those instances allowed by federal rules and regulations and only in those instances in which the granting of a variance pursuant to section 1.060 and enforcement of existing permit conditions are manifestly inappropriate.

R23-25-15 PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY

15.100 GENERAL PROVISIONS

"REVISED IN ITS ENTIRETY"

15.110 Definitions. For the purposes of this regulation:

- (1) "Major stationary source" means any of the following stationary sources of air contaminants which emit, or have the potential to emit, one hundred tons per year or more of any air contaminant regulated under the Act from the following types of stationary sources": Fossil-fuel fired steam electric plants of more than two hundred and fifty million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mills, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than two hundred and fifty tons of refuse per per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production facilities, chemical process plants, fossil-fuel boilers (or combinations thereof) of more than two hundred and fifty million British thermal units per hour heat input, petroleum storage and transfer facilities with a capacity exceeding three hundred thousand barrels, taconite ore processing facilities, glass fiber processing plants, and charcoal production facilities. Notwithstanding the source sizes specified above, such term also includes any source which emits, or has the potential to emit, 250 tons per year or more of any air contaminant regulated under the Act.
- (2) "Major modification" means any physical change in, or change in the method of operation, or expansion of a stationary source which increases the potential emission rate of any air contaminant regulated under the Act (including any no previously emitted and taking into account all accumulated increases in potential emissions occurring at the source since January 1, 1975, or since the time of the last construction approval issued pursuant to this regulation, whichever time is more recent, regardless of any emission reductions achieved elsewhere in the source) by either 100 tons per year or more for any source category identified in 15.110(1), or by 250 tons per year or more for any stationary source.
 - (a) A physical change shall not include routine maintenance, repair and replacement.
 - (b) A change in the method of operation, unless previously limited by enforceable permit conditions, shall not include:
 - (i) An increase in the production rate, if such increase does not exceed the operating design capacity of the

source;

(ii) An increase in the hours of operation;

(iii) Use of an alternative fuel or raw material, if prior to January 1, 1975, the source was capable of accommodating such fuel or material; or

(iv) Change in ownership of the source.

- (3) "Potential to emit" means the capability at maximum capacity to emit a contaminant in the absence of air pollution control equipment. Annual potential emissions shall be based on the maximum annual rated capacity of the source, unless the source is subject to enforceable permit conditions which limit the operating rate and/or hours of operation. Enforceable permit conditions on the type or amount of materials combusted or processed may be used in determining the potential emission rate of a source.
- (4) "Federal Land Manager" means, with respect to any lands in the United States, the Secretary of the department with authority over such lands.
- (5) "Commenced" as applied to construction of a major stationary source or major modification means that the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (a) begun, or caused to begin, a continuous program of physical on-site construction of the source, to be completed within a reasonable time; or be entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the owner or operator, to undertake a program of construction of the source to be completed within a reasonable time.
- (6) "Necessary preconstruction approvals or permits" means those permits or approvals, required by the Department as a precondition to undertaking any activity under (a) or (b) of definition (5) above.
- (7) "Best available control technology" means an emission limitation (including a visible emission standard) based on the maximum degree of reduction of each contaminant subject to regulation under the Act, emitted from or which results from any major stationary source or major modification which the Department, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques including fuel cleaning or treatment or innovative fuel combustion techniques for control of such contaminant. In no event shall application of "best available control technology" result in emissions of any contaminant which would exceed

the emissions allowed by any applicable standards of performance under Regulations R23-25-12 and R23-25-13 established pursuant to the Act. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular class of sources would make the imposition of an emission standard infeasible, the Department may instead prescribe a design, equipment, work practice or operational standard, or combination thereof, requiring the application of best available control technology. Such standard shall, to the degree possible, set forth the emission reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results.

- (8) "Facility" means an identifiable piece of process equipment. A stationary source is composed of one or more contaminant-emitting facilities.
- (9) "Allowable emissions" means the emission rate calculated using the maximum rated capacity of the source and the most stringent of the following:
 - (a) Applicable standards of performance and/or emission limitations as set forth in these regulations.
 - (b) The emission rate specified as a permit condition. Annual allowable emissions shall be based on the maximum annual rated capacity of the source, unless the source is subject to enforceable permit conditions which limit the operating rate or hours of operation, or both. Enforceable permit conditions on the type or amount of materials combusted or processed may be used in determining the allowable emission rate of a source.
- (10) "Indian Reservation" means any Federally-recognized reservation established by Treaty, Agreement, Executive Order, or Act of Congress.
- (11) "Indian Governing Body" means the governing body of any tribe, band, or group of Indians subject to the jurisdiction of the United States and recognized by the United States as possessing power of self-government.
- (12) "Construction" means fabrication, erection, installation, or modification of a stationary source.
- (13) "High terrain" means any area having an elevation that exceeds the plume center line (effective stack height) or is 900 feet or more above the base of the stack of a facility, whichever is less.
- (14) "Low terrain" means any area other than high terrain.
- (15) "Baseline concentration" means, with respect to any con-

taminant regulated under the Act, that ambient concentration level reflecting air quality as of January 1, 1975. For annual average concentrations, this shall be based on measured or estimated concentrations for calendar year 1974. For short-term concentrations, this shall be based on the second-highest measured or estimated concentration at a given site for calendar year 1974. Major stationary sources or major modifications on which construction commenced prior to January 1, 1975, but were not in operation as of January 1, 1975, shall be included in the baseline and shall not count against the maximum allowable increases established under this regulation. Where air quality data are not available for 1974 in any area, baseline concentrations may be estimated by either of the following techniques.

(a) (i) Utilize air quality data obtained pursuant to the monitoring requirements of Section 165(e) (1) and (2) of the Federal Clean Air Act (P.L. 95-95) or any other valid air quality data obtained since 1974, and

(ii) Adjust such air quality data to eliminate or neutralize the air quality impact of all new emissions occurring since January 1, 1975 (including non-major stationary sources and modifications) and control of existing sources occurring since January 1, 1975.

(b) Utilize an appropriate atmospheric dispersion model based on 1974 emissions to estimate the baseline concentration.

(16) "Stationary source" means any structure, building, facility, equipment, installation or operation (or combination thereof) which is located on one or more contiguous or adjacent properties and which is owned or operated by the same person (or by persons under common control).

(17) "Reconstruction" means the replacement of components of an existing facility or source to such an extent that the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility or source. Reconstruction of a source or facility shall be considered as a new source for purposes of this regulation.

(18) "Fugitive dust" means particulate emissions composed of soil which becomes suspended either by the forces of the wind or man's activity. This would include but is not limited to emissions from unpaved haul roads, wind erosion or exposed soil surfaces and soil storage piles and other activities in which soil is either removed, stored, transported, or redistributed.

15.120 Significant Deterioration of Air Quality

15.121 Area designation and deterioration increment:

- (1) The provisions of this regulation do not apply to those counties or other functionally equivalent areas on a contaminant specific basis that exceed any ambient air quality standard for sulfur dioxide or particulate matter.
- (2) For purposes of this regulation, areas designated as Class I, II, or III shall be limited to the following increases in contaminant concentration over the baseline concentration occurring since January 1, 1975.

Pollutant	Area Designations		
	Class I (ug/m**3)	Class II (ug/m**3)	Class III (ug/m**3)
Particulate matter:			
Annual geometric mean	5	10	37
24-hour maximum	10	30	75
Sulfur dioxide:			
Annual arithmetic mean	2	15	40
24-hour maximum	5	91	182
3-hour maximum	25	512	700

Provided, that for any period other than an annual period, the applicable maximum allowable increase may be exceeded during one such period per year at any receptor site.

Any conflict between an applicable increment and an applicable ambient air quality standard shall be resolved in favor of the more stringent limitation and the source shall be limited to such more stringent limitation.

- (3) The air quality impact of sources granted a permit to construct or modify prior to January 1, 1975 (pursuant to the approved new source review procedures in the plan) but not yet operating prior to January 1, 1975, shall not be counted against the air quality increments specified in 15.121(2).
- (4) All of the following areas which were in existence on August 7, 1977 are hereby designated Class I areas and may not be redesignated:
 - (a) The Theodore Roosevelt National Memorial Park--North and South Units in Billings and McKenzie Counties.
 - (b) The Lostwood National Wilderness Area in Burke County.

All other areas of the State are hereby designated Class II areas.
- (5) The following areas may be designated only as Class I or II:

(a) An area which as of August 7, 1977, exceeds 10,000 acres in size and is a national monument, a national primitive area, a national preserve, a national recreational area, a national wildlife refuge, a national lakeshore or seashore.

(b) A national park or national wilderness area established after August 7, 1977, which exceeds 10,000 acres in size.

15.130 Stack Heights

The degree of emission limitation required for control of any air contaminant under this regulation shall not be affected in any manner by--

- (1) So much of the stack height of any source as exceeds good engineering practice, or
- (2) Any other dispersion technique.

For the purpose of this section good engineering practice means, with respect to stack height, the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air contaminant in the immediate vicinity of the source as a result of atmospheric downwash, eddies, and wakes which may be created by the source itself, nearby structures or nearby terrain obstacles (as determined by the Department). Such height shall not exceed two and a half ($2 \frac{1}{2}$) times the height of such source unless the owner or operator of the source demonstrates, after notice and opportunity for public hearing, to the satisfaction of the Department, that a greater height is necessary as provided under the preceding sentence. In no event may the Department prohibit any increase in any stack height or restrict the stack height of any source.

15.140 Review of New Major Stationary Sources and Major Modifications

15.141 Applicability

The requirements of this regulation shall apply to any major new stationary source or modification which:

- (1) has not been issued a permit to construct or modify prior to March 1, 1978; or
- (2) has not commenced construction prior to March 1, 1979; or
- (3) has discontinued construction for a period of 18 months or more and has not completed construction within a reasonable time.

Review of these sources or modifications shall be conducted in con-

junction with the issuance of permits to construct pursuant to 14.200 of these regulations.

15.142 Permits: General

No source subject to this regulation shall be constructed in any area unless--

- (1) A permit has been issued for such proposed source in accordance with this regulation setting forth emission limitations or equipment standards for such source which conform to the requirements of this regulation and any conditions necessary to ensure that the proposed source will meet such limits or standards;
- (2) The requirements of 15.143 through 15.1412 of this regulation, as applicable, have been met; and
- (3) The proposed permit has been subject to a review in accordance with this regulation, the required analysis has been conducted in accordance with the requirements of this regulation, and the procedures for public participation as defined in 15.150 have been followed.

15.143 Control Technology Review

- (1) A major stationary source or major modification shall meet all applicable emission limitations under the State Implementation Plan and all applicable emission standards and standards of performance of these regulations.
- (2) The source or modification shall apply best available control technology for each contaminant for which a proposed source or modification would be a major source or major modification, if the allowable emissions of that contaminant would be increased by 50 tons per year, 1000 pounds per day, 100 pounds per hour, or more. In determining whether and to what extent the source or modification would increase allowable emissions, there shall be taken into account:
 - (a) all accumulated emission increases occurring at the source since January 1, 1975, or since the time of the last construction approval issued pursuant to this regulation, whichever time is more recent; and
 - (b) no emission reductions achieved elsewhere at the source;
- (3) In the case of a modification, the requirements for best available control technology shall apply to the new or modified facilities which would increase emission potential within a source; and
- (4) For phased construction projects the determination of best available control technology shall be reviewed, and modified

as appropriate, at the latest reasonable time prior to commencement of construction of each independent phase of the proposed source or modification.

15.144 Exemptions from Impact Analysis

- (1) With respect to a particular contaminant, so long as emissions of that contaminant from a source or modification would not impact any Class I area or any area where an applicable increment is known to be violated, the requirements of 15.145, 15.147, and 15.149 shall not apply to a major stationary source or major modification, if--
 - (a) The increased allowable emissions of the contaminant would be less than 50 tons per year, 1000 pounds per day, or 100 pounds per hour, whichever is more restrictive. The determination of the extent of increased allowable emissions--
 - (i) Shall take into account all accumulated emission increases occurring at the source since January 1, 1975, or since the time of the last construction approval issued pursuant to this regulation, whichever time is more recent; and
 - (ii) Shall not take into account emission reduction achieved elsewhere at the source.
 - (b) The emissions of the contaminant are of a temporary nature including but not limited to those from a pilot plant, a portable facility, construction, or exploration.
 - (c) A source is modified, but no increase in the net amount of emissions for any contaminant subject to an ambient air quality standard and no adverse air quality impact would occur.
- (2) A major stationary source or major modification shall not be subject to the requirements of 15.145, 15.147, and 15.149 as regards fugitive dust.

15.145 Air Quality Review

The owner or operator of the proposed source or modification shall demonstrate that allowable emissions from the source, in conjunction with applicable emissions increases or reductions from any other sources, will not cause or contribute to air pollution in violation of:

- (1) Any ambient air quality standard in any air quality control region; or
- (2) Any applicable maximum allowable increase over the baseline concentration in any area.

15.146 Air Quality Models

- (1) All estimates of ambient concentrations required under this section shall be based on the applicable air quality models, data bases, and other requirements specified in the "Guidelines on Air Quality Models" (OAQPS 1.2-080 (Revised), U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. 27711, April 1978). This document is incorporated by reference.
- (2) Where an air quality impact model specified in the "Guidelines on Air Quality Models" is inappropriate, the model may be modified or another model substituted. Such a change must be subject to notice and opportunity for public comment under 15.150. Written approval of the Department must be obtained for any modification or substitution. Methods like those outlined in the "Workbook for the Comparison of Air Quality Models" (U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, N.C. 27711, April 1977) should be among those used to determine the comparability of air quality models.

15.147 Monitoring

- (1) The owner or operator shall conduct such monitoring as the Department determines may be necessary to establish the effect which emissions from a source or modification may have, or is having, on air quality in any area which may be affected by emissions from the source or modification.
- (2) As necessary to determine whether emissions from a source or modification would cause or contribute to a violation of the maximum allowable concentration under 15.121(2), any permit application submitted after August 7, 1978, shall include an analysis of up to one year of continuous air quality monitoring data for any contaminant that the source or modification would emit for which there is an ambient air quality standard, except non-methane hydrocarbons.

15.148 Source Information

The owner or operator of a major stationary source or major modification shall submit all information necessary to perform any analysis to make any determination required under this regulation.

- (1) Such information shall include:

- (a) A description of the nature, location, design capacity, and typical operating schedule of the proposed source or modification, including specifications and drawings showing the design and plant layout of the source or modification;
- (b) A detailed schedule for construction of the source or modification;

- (c) A detailed description as to what system of continuous emission reduction is planned by the source or modification, emission estimates, and any other information necessary to determine that best available control technology would be applied;
- (2) Upon request of the Department, the owner or operator shall also provide information on:
 - (a) The air quality impact of the source or modification, including meteorological and topographical data necessary to estimate such impact; and
 - (b) Information on the air quality impacts and the nature and extent of general commercial, residential, industrial, and other growth which has occurred since January 1, 1975, in the area the source or modification would affect.

15.149 Additional Impact Analyses

- (1) An analysis shall be made of the impairment to visibility that would occur as a result of the source or modification and general commercial, residential, industrial and other growth associated with the source or modification. An assessment of an anticipated adverse impact on soils and vegetation in the vicinity of the source or modification shall also be included. Of particular concern are effects that would have significant commercial or recreational value.
- (2) An analysis shall be made of the air quality impact projected for the area as a result of general commercial, residential, industrial and other growth associated with the source or modification.

15.1410 Sources Impacting Federal Class I Areas--Additional Requirements

(1) Notice to EPA

The Department shall transmit to the Administrator of the U.S. Environmental Protection Agency through the U.S. EPA Region VIII Regional Administrator a copy of each permit application relating to a major stationary source or major modification received by the Department and provide notice to the Administrator of every action related to the consideration of such permit.

(2) Notice of Federal Land Managers

The Department shall provide notice of the permit application, a copy of the preliminary determination required under 15.150, and any materials used in making that determination to the Federal Land Manager and the Federal official charged with direct responsibility for management of any lands within a

Class I area which may be affected by emissions from the proposed source.

(3) Denial-Impact on Air Quality Related Values

A Federal Land Manager may present to the Department, after reviewing the Department's preliminary determination required under 15.150, a demonstration that the emission from an applicable source will have an adverse impact on the air quality-related values (including visibility) of Federal mandatory Class I lands, notwithstanding that the change in air quality resulting from emissions from such source or modification will not cause or contribute to concentrations which exceed the maximum allowable increases for a Class I area. If the Department concurs with such demonstration, the permit shall not be issued.

(4) Class I Variances

- (a) The owner or operator of a proposed source may demonstrate to the Federal Land Manager that the emissions from such source or modification will have no adverse impact on the air quality-related values of any such lands (including visibility), notwithstanding that the change in air quality resulting from emissions from such source or modification will cause or contribute to concentrations which exceed the maximum allowable increases for a Class I area. If the Federal Land Manager concurs with such demonstration and he so certifies to the Department, the Department may issue the permit pursuant to the requirements of 15.1410 (4) (b): Provided, that the applicable requirements of this regulation are otherwise met.
- (b) In the case of a permit issued pursuant to 15.1410 (4) (a), such source or modification shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur dioxide and particulate matter will not exceed the following maximum allowable increases over the baseline concentration for such contaminants:

Maximum allowable increase
(micrograms per cubic meter)

Particulate matter:

Annual geometric mean	10
24-hour maximum	30

Sulfur dioxide:

Annual arithmetic mean	15
24-hour maximum	91
3-hour maximum	325

(5) Sulfur Dioxide Variance by Governor with Federal Land Manager's Concurrence

The owner or operator of a proposed source or modification which cannot be approved under 15.1410(4) may submit a demonstration to the Governor, after notice and public hearing, that the source or modification cannot be constructed by reason of any maximum allowable increase for sulfur dioxide for period of twenty-four hours or less applicable to any Class I area and, in the case of Federal mandatory Class I areas, that variance under this clause will not adversely affect the air quality related values of the area (including visibility). The Governor, after consideration of the Federal Land Manager's recommendation (if any) and subject to his concurrence, may grant a variance from such maximum allowable increase. If such variance is granted, the Department shall issue a permit to such source or modification pursuant to the requirements of 15.1410(7): Provided, that the applicable requirements of this regulation are otherwise met.

(6) Variance by the Governor with the President's Concurrence

In any case where the Governor recommends a variance under this division in which the Federal Land Manager does not concur, the recommendations of the Governor and the Federal Land Manager shall be transmitted to the President. The President may approve the Governor's recommendation if he finds that such variance is in the national interest. If such a variance is approved, the Department shall issue a permit pursuant to the requirements of 15.1410(7): Provided, That the applicable requirements of this regulation are otherwise met.

(7) Emission Limitations for Presidential or Gubernatorial Variance

In the case of a permit issued pursuant to 15.1410(5) or (6), such source or modification shall comply with such emission limitations under such permit as may be necessary to assure that emissions of sulfur dioxide from such source or modification will not (during any day on which the otherwise applicable maximum allowable increases are exceeded) cause or contribute to concentrations which exceed the following maximum allowable increases over the baseline concentration and to assure that such emissions will not cause or contribute to concentrations which exceed the otherwise applicable maximum allowable increases for periods of exposure of 24 hours or less for more than 18 days, not necessarily consecutive, during any annual period:

Maximum allowable increase

(micrograms per cubic meter)

Period of exposure	Low Terrain areas	High Terrain areas
24-hr maximum	36	62
3-hr maximum	130	221

15.1411 Proposed Redesignations

Where an owner or operator has applied for permission to construct pursuant to this regulation and the proposed source or modification would impact on an area which has been proposed for redesignation to a more stringent class by the Department, an Indian governing body or another State (or the State or Indian governing body has announced such consideration), approval shall not be granted until the proposed redesignation has been acted upon. However, approval shall be granted if, in the Department's judgment, the proposed source would not violate the increments that would be applicable if the redesignation is approved. The Department shall withhold approval under this section only so long as the Committee of petitioners, the other State or Indian governing body is actively and expeditiously proceeding toward redesignation.

15.1412 Portable Facilities

A portable facility which has previously been reviewed under the requirements of 15.143 through 15.1411 and 15.150 may relocate without being subject to the requirements of this regulation if--

- (1) Emissions from the facility would not exceed allowable emissions; and
- (2) Emissions from the facility would not impact any Class I area or any area where an applicable increment is known to be violated; and
- (3) Notice is given to the Department at least 30 days prior to such relocation identifying the proposed new location and the probable duration of stay at such location.

15.150 Public Participation

15.151 Within thirty (30) days after receipt of an application to to construct a source or modification subject to this regulation or any addition to such application, the Department shall advise the applicant of any deficiency in the information submitted. In the event of such a deficiency, the date and receipt of the application, for the purpose of this regulation, shall be the date on which all required information is received by the Department.

15.152 Within one year after receipt of a completed application, the Department shall:

- (1) Make a preliminary determination whether the source should be approved, approved with conditions, or disapproved pursuant to the requirements of this regulation.
- (2) Make available in at least one location in each region in which the proposed source or modification would be constructed, a

copy of all materials submitted by the applicant, a copy of the Department's preliminary determination and a copy or summary of other materials, if any, considered by the Department in making a preliminary determination;

- (3) Notify the public, by prominent advertisement in newspapers of general circulation in each region in which the proposed source or modification would be constructed, of the application, the preliminary determination, the degree of increment consumption that is expected from the source or modification, and the opportunity for comment at a public hearing as well as written public comment on the information submitted by the owner or operator and the Department's preliminary determination on the approvability of the source.
- (4) Send a copy of the notice required in 15.152(3) to the applicant, the U.S. EPA Administrator and to officials and agencies having cognizance over the locations where the source or modification will be situated as follows: Local air pollution control agencies, the chief executive of the city and county where the source or modification would be located; any comprehensive regional land use planning agency; and any State, Federal Land Manager, or Indian Governing Body whose lands may be significantly affected by emissions from the source or modification.
- (5) Provide opportunity for a public hearing, to be held during the public comment period, for interested persons, including representatives of the U.S. EPA Administrator, to appear and submit written or oral comments on the air quality impact of the source or modification, alternatives to the source or modification, the control technology required, and other appropriate considerations.
- (6) Consider all public comments submitted in writing within a time specified in the public notice required in 15.152(3) and all comments received at any public hearing(s) conducted pursuant to 15.152(5) in making its final decision on the approvability of the application. No later than 10 days after the close of the public comment period, the applicant may submit a written response to any comments submitted by the public. The Department shall consider the applicant's response in making its final decision. All comments shall be made available for public inspection in the same locations where the Department made available preconstruction information relating to the source or modification.
- (7) Make final determination whether the source should be approved, approved with conditions, or disapproved pursuant to the requirements of this regulation.
- (8) Notify the applicant in writing of the Department's final determination. Such notification shall be made available for

public inspection in the same locations where the Department made available preconstruction information and public comments relating to the source or modification.

15.160 Source Obligation

15.161 Any owner or operator who constructs or operates a stationary source or modification not in accordance with the application, submitted pursuant to 15.140 or with the terms of any permit to construct; or any owner or operator of a stationary source or modification subject to this regulation who commences construction after the effective date of this regulation without applying for an receiving a permit to construct hereunder, shall be subject to enforcement action under Section 23-25-10 of the Act.

15.162 A permit to construct shall become invalid if construction is not commenced within 18 months after receipt of such permit, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18 month period upon a satisfactory showing that an extension is justified. This provision does not apply to the time period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date. In cases of major construction projects involving long lead times and substantial financial commitments, the Department may provide by a condition to the permit a time period greater than 18 months when such time extension is supported by sufficient documentation by the applicant.

115.163 A permit to construct shall not relieve any owner or operator of the responsibility to comply fully with the applicable provisions of the State Implementation Plan and any other requirements under local, State, or Federal law.

15.200 RECLASSIFICATION

15.210 Reclassification of Areas

All areas (except as otherwise provided under 15.121(4)) shall be designated either Class I, Class II, or Class III. Any designation other than Class II shall be subject to the redesignation procedures of this section. Redesignation (except as otherwise precluded by 15.121(4) or (5) are subject to approval by the Administrator of the U.S. Environmental Protection Agency.

15.211 Reclassification by Petition

(1) Filing of Petition

After twenty percent of the qualified electors in any county, as determined by the vote cast for the office of Governor at the last preceding gubernatorial election, shall petition the Department to reclassify any area within such county to Class I, Class II or Class III, the Department shall hold a hearing and take such other action as specified in 15.230. The Department shall reclassify the area proposed in the petition for reclassification only if such reclassification is substantially supported by the hearing record.

(2) Contents of Petition

The petition for petitioning the Department to reclassify any area to either Class I, Class II or Class III as specified in 15.121(2) shall contain a legal description of the area in which the petition is to affect; an explanation of the meaning and purpose of the petition and reclassification; a statement to the effect that those persons signing the petition desire the described area to be reclassified to either Class I, Class II or Class III and such statement shall specify which class; a list of those persons or person circulating such petition, which persons shall be designated "Committee of Petitioners"; an affidavit to be attached to each petition and sworn to under oath before a notary public by the person circulating each petition attesting to the fact that he circulated such petition and that each of the signatures to such petition is the genuine signature of person whose name it purports to be, and that each such person is a qualified elector in the county in which the petition was circulated; all petitions' signatures shall be numbered and dated by month, day and year, and the name shall be written with residence address and post office address including the county of residence followed by State of North Dakota.

15.212 Reclassification Upon Department's Own Motion

At such time as the Department may determine, it may hold a public hearing and take such other action as specified in 15.220 in order to reclassify any area of this State to Class I, Class II or Class III. The Department shall reclassify the area proposed for reclassification only if such reclassification is substantially supported by the hearing record.

15.220 Procedures for Reclassification

15.221 The Department may reclassify any area of this State, including any federally-owned lands, but excluding lands within the exterior boundaries of any Indian reservation, to either Class I or Class II pursuant to 15.211 and 15.212, provided that:

- (1) At least one public hearing is held in or near the area affected and this public hearing is held in accordance with the

procedures established in 15.230, and

- (2) Other States, Indian Governing Bodies, and Federal Land Managers whose lands may be affected by the proposed redesignation are notified at least thirty (30) days prior to the public hearing;
- (3) A discussion of the reasons for the proposed redesignation including a satisfactory description and analysis of the health, environmental, economic, social and energy effects of the proposed redesignation is prepared and made available for public inspection at least thirty (30) days prior to the hearing and the notice announcing the hearing contains appropriate notification of the availability of such discussion;
- (4) Prior to the issuance of notice respecting the redesignation of any area that includes any Federal lands, the State shall provide written notice to the appropriate Federal Land Manager and afford adequate opportunity (but not in excess of 60 days) to confer with the State respecting the redesignation and to submit written comments and recommendations with respect to such redesignation. In redesignating any area with respect to which any Federal Land Manager has submitted written comments and recommendations, the State shall publish a list of any inconsistency between such redesignation and such comments and recommendations and an explanation of such inconsistency (together with the reasons for making such redesignation against the recommendation of the Federal Land Manager).
- (5) The proposed redesignation is based on the record of the State's hearing, which must reflect the basis for the proposed redesignation, including consideration of
 - (a) growth anticipated in the area,
 - (b) the social, environmental, health, energy, and economic effects of such redesignation upon the area being proposed for redesignation and upon other areas and states, and
 - (c) any impacts of such proposed redesignation upon regional or national interests. Anticipated growth shall include growth resulting both directly and indirectly from proposed development.
- (6) The redesignation is proposed after consultation with the elected leadership of local and other substate general purpose governments in the area covered by the proposed redesignation.

15.222 The Department may reclassify any area of this State, including any federally-owned lands but excluding lands within the exterior boundaries of any Indian reservations, other than an area referred to in 15.121(5) or an area established as Class I under 15.121(4) to Class III if--

- (1) Such redesignation would meet the requirements of 15.221;
- (2) Such redesignation has been specifically approved by the Governor of the State, after consultation with the appropriate Committees of the Legislature if it is in session or with the leadership of the Legislature if it is not in session and if general purpose units of local government representing a majority of the residents of the area so redesignated enact legislation or pass resolutions concurring with the State's redesignation;
- (3) Such redesignation will not cause, or contribute to, a concentration of any air contaminant which would exceed any maximum allowable increase permitted under the classification of any other area, or any applicable ambient air quality standard;
- (4) Prior to any public hearing on redesignation of any area, there shall be available insofar as is practicable for public inspection any specific plans for any new major stationary source or major modification which may be permitted to be constructed and operated only if the area in question is redesignated as Class III.

15.230 Reclassification Hearings

15.231 Any hearing required by 15.220 shall be held only after reasonable notice, which shall be considered to include, at least thirty (30) days prior to the date of such hearing(s):

- (1) Notice given to the public by prominent advertisement in the region affected announcing the date(s), time(s), and place(s) of such hearing(s);
- (2) Availability of each proposed plan or revision for public inspection in at least one location in each region to which it will apply, and the availability of each compliance schedule for public inspection in at least one location in the region in which the affected source is located;
- (3) Notification to the Administrator of the U.S. EPA (through the appropriate regional office);
- (4) Notification to each local air pollution control agency in each region to which the plan, schedule, or revision will apply; and
- (5) In the case of an interstate region, notification to any other states included, in whole or in part, in the region.
- (6) Notification to any States, Indian Governing Bodies, and Federal Land Managers whose lands may be affected by the proposed redesignation.

15.232 The Department shall prepare and retain for inspection, a

record of each hearing. The record shall contain, as a minimum, a list of witnesses together with the test of each presentation.

15.233 Any hearing held pursuant to the provisions of 15.230 shall be held only for the purpose of considering such reclassification as has been noticed under the provisions of 15.220, and consideration of reclassification to other classes not so noticed shall not be allowed.

15.234 Any hearing held pursuant to these provisions may be continued for such purposes and for such periods of time as the Department may determine.

15.240 Assessment Report for Reclassification Effects

Prior to the granting or denial of the petition for reclassification, any committee of petitioners, as designated pursuant to 15.211(2), shall submit a detailed report on those matters specified in 15.211(5). The report shall be submitted to the Department in final form within twelve (12) months of the date of the filing of the petition pursuant to 15.211(1).

R23-25-16 RESTRICTION OF ODOROUS AIR CONTAMINANTS

16.100 GENERAL PROVISIONS

16.110 For the purpose of this regulation, an odor will be considered objectionable when at least 30 percent of a randomly selected group of persons or an odor panel exposed to the odor would deem that odor objectionable if the odor were present in their place of residence.

16.120 For the purpose of this regulation, an "odor concentration unit" shall be defined as meaning the number of standard cubic feet of odor-free air needed to dilute each cubic foot of odoriferous air so that a Department certified inspector or at least 50 percent of an odor panel does not detect any odor in the dilute mixture.

16.200 EMISSIONS OF ODOROUS SUBSTANCES RESTRICTED

No person shall discharge into the ambient air any objectionable odorous air contaminant which is in excess of two odor concentration units outside the property boundary.

16.300 REGULATION RESTRICTION

16.310 Compliance with the provisions of this regulation shall not operate as a defense to any legal action which is based upon the theory of public and/or private nuisance.

16.400 METHOD OF MEASUREMENT

Procedures for obtaining ambient air samples containing odorous air contaminants and presenting such samples to the odor panel for tests shall be accomplished according to ASTM Method D-1391-57 or other method as approved by the Department. An odor panel shall consist of a minimum of 5 persons.

Selection of odor panel members shall follow the guidelines set forth in "Selection and Training of Judges for Sensory Evaluation of the Intensity and Character of Diesel Exhaust Odors," U.S. PHS Publication No. 999-AP-32.

A Barnebey-Cheney Scentometer suitable calibrated or other instrumental method, as approved by the Department may be used in the determination of the intensity of an odor.

R23-25-17 RESTRICTION OF FUGITIVE EMISSIONS

17.100 GENERAL PROVISIONS

17.110 Applicability and Designation of Affected Facilities

17.111 The provisions of this Regulation apply to the owner and/or

operator of any source of fugitive emissions whatsoever.

- 17.112 No person shall cause or permit fugitive emissions from any source whatsoever, including but not limited to a building, its appurtenances, or a road, to be used, constructed, altered, repaired or demolished; or activities such as loading, unloading, storing, handling or transporting of materials without taking reasonable precautions to prevent such emissions which: may cause injury, deterioration, nuisance or annoyance to any person or to the public or which endangers the comfort, repose, health, or safety of any such person or public or which causes injury or damage or business or property.

17.200 RESTRICTION OF FUGITIVE PARTICULATE EMISSIONS

- 17.210 No person shall emit or cause to be emitted into the ambient air from any source of fugitive emissions as specified in Section 17.110 any particulate matter which:
- 17.211 Causes the ground level concentration(s) at point(s) selected by the Department at or beyond the property line to exceed 240 micrograms per cubic meter, 8-hour average, above upwind concentrations. Samples shall be obtained by using a high volume air sampler or other equivalent method using an 8-hour sampling interval, or
- 17.212 Exceed the Ambient Air Quality Standards of Regulation R23-25-02 at or beyond the property line of the source, or
- 17.213 Exceed the Prevention of Significant Deterioration of Air Quality increments of Regulation R23-25-15 at or beyond the property line of the source for sources subject to Regulation R23-25-15, or
- 17.214 Exceed the restrictions on the emission of visible air contaminants of Regulation R23-25-03, at or beyond the property line of the source.
- 17.215 Agricultural activities related to the normal operations of a farm shall be exempt from the requirements of Section 17.210. However, agricultural practices such as tilling of land, application of fertilizers and the harvesting of crops shall be managed in such a manner as to minimize dust from becoming airborne.

17.300 REASONABLE PRECAUTIONS FOR ABATING AND PREVENTING FUGITIVE PARTICULATE EMISSIONS

17.310 Unpaved Roads and Unpaved Parking Areas

- 17.311 Abatement and preventive measures include but shall not be limited to frequent watering, addition of dust palliatives, detouring, paving, closure, speed control, or other means

such as surface treatment with penetration chemicals (ligninsulfonates, oil, water, cutbacks, etc.) or methods of equal or greater effectiveness in reducing the air contamination produced.

17.320 Demolition, Wrecking and Explosive Detonation Activities; Earth and Construction Material Moving, Mining and Excavation Activities

17.321 Abatement and preventive fugitive particulate control measures include, but are not limited to:

- (1) wetting down, including pre-watering;
- (2) landscaping and replanting with native vegetation;
- (3) covering, shielding or enclosing the area;
- (4) paving, temporary or permanent;
- (5) treating, the use of dust palliatives and chemical stabilization;
- (6) detouring;
- (7) restriction of the speed of vehicles on sites;
- (8) prevention of the deposit of dirt and mud on improved streets and roads;
- (9) minimizing topsoil disturbance and reclaiming as soon as possible.

17.322 Sequential blasting be employed whenever or wherever feasible to reduce the amounts of particulate matter.

17.323 Such dust control strategies as revegetation, delay of topsoil disturbance until necessary, or surface compaction and sealing, be applied.

17.324 Haulage equipment be washed or wetted down, treated, or covered when necessary to minimize the amount of dust becoming airborne in transit and in loading.

17.325 Stockpile of materials be treated to prevent blowing or the material be contained in silos or other suitable enclosures.

17.326 Waste disposal sites be so operated and constructed as to prevent particulate matter from becoming airborne.

17.327 All conveyors, transfer points, crushers, screens and dryers be so constructed, protected or treated as to prevent particulate matter from becoming airborne.

17.328 These measures also be used during periods when actual construction work is not being conducted, such as on weekends and holidays.

17.400 RESTRICTION OF FUGITIVE GASEOUS EMISSIONS

17.410 No person shall emit or cause to be emitted into the ambient air from any source of fugitive emissions as specified in Section 17.110 any gases which:

17.411 Exceed the Ambient Air Quality Standards of Regulation R23-25-02 at or beyond the property line of the source, or

17.412 Exceed the Prevention of Significant Deterioration of Air Quality increments of Regulation R23-25-15 at or beyond the property line of the source for sources subject to Regulation R23-25-15, or

17.413 Exceed the emission restrictions for odorous substances of Regulation R23-25-16 at or beyond the property line of the source, or

17.414 Exceed the restrictions on the emission of visible air contaminants of Regulation R23-25-03 at or beyond the property line of the source.